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AUTHOR - AUTEUR

Full Name of Author - Nom complet de l'auteur

Barbara Elizabeth Stevens

Date of Birth - Date de naissance

20/11/45

Canadian Citizen - Citoyen canadien

☒ Yes / Oui☐ No / Non

Country of Birth - Lieu de naissance

Canada

Permanent Address - Résidence fixe

5536-19A Ave.
Edmonton, Alberta
T6L 2C1

THESIS - THÈSE

Title of Thesis - Titre de la thèse

Knowledge of Patients after Myocardial Infarction:
Effectiveness of Telephone Follow-upDegree for which thesis was presented
Grade pour lequel cette thèse fut présentée

Master's in Nursing

Year this degree conferred
Année d'obtention de ce grade

Fall, 1985

University - Université

University of Alberta

Name of Supervisor - Nom du directeur de thèse

Dr. Janet Kerr

AUTHORIZATION - AUTORISATION

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THE EFFECTIVENESS OF PATIENT EDUCATION FOLLOW-UP BY
TELEPHONE ON KNOWLEDGE OF POST-MYOCARDIAL INFARCTION PATIENTS

BY



BARBARA STEVENS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER'S OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA

FALL, 1985

THE UNIVERSITY OF ALBERTA

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Infarction: Effectiveness of Telephone Follow-Up

DEGREE: Master's of Nursing

YEAR THIS DEGREE GRANTED: 1985

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Barbara Stevens
(Student's signature)

5536-19A Ave. Edmonton
(Student's permanent address)

Alberta, T6L 2C1

Date: October 3, 1985

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Knowledge of Patients after Myocardial Infarction: Effectiveness of Telephone Follow-Up submitted by Barbara Stevens in partial fulfillment of the requirements for the degree of Master's in Nursing.

Donet Lo Keng
(Supervisor)

Kyung Bong

Robert Fraser

Date: October 3, 1985

This manuscript is dedicated to Wayne for his love,
support and encouragement.

Abstract

The purpose of this study was to investigate the impact of patient education follow-up by telephone on the knowledge of the post-myocardial infarction (M.I.) patient. The telephone follow-up calls were carried out by three Cardiac Rehabilitation Research Nurses (C.R.R.N.). The effect of this intervention on knowledge levels and the M.I. patient's ability to care for himself/herself was assessed according to measurement criteria developed by Horn and Swain (1977) using a framework based on the work of Orem (1977). The study was carried out in a large teaching hospital and involved 51 subjects drawn from the total population of M.I. patients admitted to the Coronary Care Unit (C.C.U.) of the hospital during the allocated time frame of the study. Subjects were randomly assigned to experimental and control groups. It was hypothesized that the experimental intervention would increase patient knowledge in the areas of: (a) the health deviation, its effect and related self-care measures; (b) medications; (c) therapeutic diet; (d) recommended exercises; (e) physical activity restrictions; and (f) recommended rest. The study also describes the concerns identified through telephone follow-up by the patient and family members/significant others. A description of the nursing actions initiated as the result of these identified concerns is also included in the study.

In the analysis of the data a statistically significant ($\alpha = 0.05$) difference was obtained between the knowledge level of the experimental and control groups in the areas of the M.I., its effects and related self-care measures and recommended exercises. Although a statistically significant difference was not found in the teaching areas of therapeutic diet, medications, physical activity restrictions and recommended rest a higher mean was produced for the experimental group in all areas except recommended rest. A statistically significant difference was produced when all the teaching areas were analyzed together.

Patient's concerns, questions and verbalized symptoms were categorized under six general headings. They included 1) concerns related to effects of the M.I. and recommended lifestyle, 2) experienced symptoms other than cardiac, 3) concerns related to follow-up care, 4) experienced possible cardiac symptoms, 5) concerns related to medications, and 6) concerns related to personal or home problems. A total of twenty-nine patients were telephoned. Twenty-seven patients expressed at least one concern or question. Four spouses also expressed concerns and questions to the C.R.R.N. and six patients in the control group initiated telephone calls to the C.R.R.N. to express concerns and report symptoms they had been experiencing.

The nursing actions, initiated as the result of the questions, concerns and verbalized symptoms, were categorized into thirteen categories. The most frequently used nursing action used by the C.R.R.N.'s was to teach or give information in relation to a specific problem (31%). The C.R.R.N.'s were able to deal directly with the questions, concerns or reported symptoms 86 percent of the time. The nurses referred the patient to another health professional in only 14 percent of the total nursing actions.

The findings of this study indicate that a telephone teaching program for the M.I. patient six to eight weeks following hospital discharge can be effective in increasing patient knowledge in the areas of the M.I., its effects and related self-care measures, therapeutic diet, medications, physical activity restrictions, recommended exercise and recommended rest. The findings also indicate that M.I. patients, when telephoned by a cardiac nurse, will verbalize a number of questions, concerns and symptoms. The cardiac nurses in the study were able to utilize both medical and non-medical knowledge to answer patient's questions and carried out thirteen general types of nursing actions in response to the patient's concerns, questions and reported symptoms.

Acknowledgements

I wish to acknowledge the invaluable assistance that I received from many colleagues in the development and implementation of this study. I wish to thank Louise Payne, R.N., M.N., Marilyn Wales, R.N., M.Sc.N., and K. Leslie Davidson, R.N., B.Sc.N., who provided their expertise in reviewing the questions used for the structured interview.

A special thank you to the interviewers who were so generous with their time even though their commitment proved to be much longer than they had originally anticipated. They are in alphabetical order: Donna Anstey, R.N., Jean Mah, R.N., B.Sc.N., Ruth Nicholson, R.N., Susan Patrick, R.N., B.Sc.N., Sarah Rowden, R.N., and Bernice Schlaut, R.N., B.Sc.N.

Thank you to K. Leslie Davidson, R.N., B.Sc.N., and Bernice Schlaut, R.N., B.Sc.N., for agreeing to teach patients over the telephone and to Dr. R. Rossall, Director of Cardiology, University of Alberta Hospitals, Dr. C.T. Kappagoda, Director Cardiac Rehabilitation, University of Alberta Hospitals, Dr. Barbara Horn, Professor and Chairperson, School of Nursing, University of Washington, and Dr. Shirley Stinson, Associate Dean for Graduate Education and Research, University of Alberta for their invaluable input into the development of the research proposal.

Last but not least, I wish to thank my committee Dr. Janet Kerr, Dr. Kyung Bay and Dr. Robert Fraser for their assistance, with a special thank you to Dr. Janet Kerr, Chairman of my committee, for her encouragement and generously given expertise throughout the past year.

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Chapter I

INTRODUCTION

Ischemic heart disease (IHD) has been identified as the single most important cause of morbidity and mortality for men over forty in the western world. In the Lalonde Report (1974) it is noted that compared to women, men over forty lose three potential years of life due to IHD. It is also estimated that 45 per cent of hospital morbidity measured by the number of hospital days can be attributed to four major causes, diseases of cardiovascular system being listed as number one. Even when measured by number of hospital admissions, diseases of the cardiovascular system ranked fifth in Canada (Lalonde, 1974).

Deaths from acute myocardial infarction continue to be significant with morbidity rates in Canada reported to be 268 per 100,000 males, and 122 per 100,000 females (Statistics Canada, 1982). However a reduction in North America of cardiovascular mortality of more than 30% has been apparent in the last 30 years (Levy, 1978). More specifically, Stamler (1981) has pointed out that there has been a 25% reduction in mortality for those between the ages of 35 to 74. Deaths in this age range are considered to be premature coronary mortalities and continue to constitute deaths occurring in the prime of life.

Coronary artery disease is a chronic illness frequently requiring a change in lifestyle either due to the limitations of

the disease process or resulting restrictions necessitated by the medical regime. Patients experiencing a myocardial infarction begin rehabilitation in hospital and continue into the out-patient phase. The rehabilitation of cardiac patients can be described as occurring in four major phases 1) acute care, 2) recovery in the hospital, 3) convalescence at home and, 4) resumption of normal activities (Granger, 1974). Cardiac rehabilitation programs have traditionally focused on phases one, two and four. A lack of continuity for patient follow-up during phase three, the home convalescence period of recovery, has been identified (Stevens, 1979; Denvey, 1980; Sivarajan, 1983).

Patient education has become an accepted component of many Cardiac Rehabilitation Programs (Bilodeau & Hackett, 1971; Anderson, 1974; Founet and Carm, 1974; Rahe et al., 1975; Pozen et al., 1977; Baker and McCoy, 1979; Linde and Janz, 1979; White et al., 1980; Scalzi et al., 1980; Denvey, 1980; Seger and Schlesinger, 1981; Gregor, 1980; Murdaugh, 1982; Sivarajan et al., 1983) but there are apparent differences amongst programs centered around such questions as: who should teach the patient, what should be taught to the patient, what is the best method for teaching patients and how can the results of learning be best evaluated? The education component of many rehabilitation programs continues to be based upon assumptions made regarding the educational process of the M.I. patient.

Green et al. (1980) describe patient education as "planned combinations of learning activities designed to assist people who are having or have had experience with illness or disease in making changes in their behavior conducive to health." Reasons for noncompliance to the medical regime are many and the research methodology used to measure compliance is varied in its approach and findings (Sackett and Snow, 1979). Anderson (1974) outlined criteria that would serve to determine attainment and maintenance of outcome for the nursing care of patients with congestive heart failure. The outcomes were viewed in terms of physiologic parameters, learning behavior, and attitudinal behavior. The learning and attitudinal criteria were seen as directly influencing the physiologic outcome, but their primary effect was upon maintenance of the outcome. Positive health indices were incorporated into the outcome criteria and were viewed as essential to the maintenance of outcomes. These indices included an increase in health knowledge, the ability to apply the knowledge and maintain positive health behavior, as well as, the ability to participate in health decision making, and to function in work and personal roles.

Background of the Research

For approximately one and half years, the investigator had been involved in initiating follow-up teaching via the telephone for M.I. patients leaving the institution chosen for the proposed

research. The telephone follow-up calls were originally initiated based upon the assumption that patients might experience problems related to their illness, convalescence and rehabilitation following discharge from hospital. The telephone follow-up calls were designed to gain information related to common problems and concerns experienced by the M.I. patient during the first twenty-eight days post discharge from hospital. Based upon this experience and the questions arising from the literature review in this area of the rehabilitation of the M.I. patient, the investigator became interested in this method for teaching and follow-up of M.I. patients' progress. The rationale for initiating the program was that a series of nurse-patient interactions would serve to reinforce information previously given in hospital and would also allow for the provision of counselling/education in areas of concern to the patient. The use of a series of nurse-patient interactions via the telephone as a method to provide and reinforce information for the post M.I. patient had not been fully explored in terms of its potential outcomes for the M.I. patient, either positive or negative.

Purpose and Research Objectives

The objective in this study was to investigate the use of telephone follow-up as a method for increasing self-care knowledge of the post myocardial infarction (MI) patient during the "home convalescent phase" of recovery lasting 6-8 weeks. The specific

research objectives included the following:

- 1) To measure levels of knowledge in the areas of:
 - a) the health deviation, its effect and related self-care measures,
 - b) medications,
 - c) therapeutic diet,
 - d) recommended exercises,
 - e) physical activity restrictions and,
 - f) recommended rest within both the control and experimental groups post discharge from hospital and eight weeks post myocardial infarction.
- 2) To describe concerns of both the experimental and control groups identified through the use of the telephone follow-up during the 6-8 week convalescent period following discharge from hospital by a) the patient, and b) family members/significant others.
- 3) To describe nursing actions initiated as a result of concerns identified by the telephone follow-up calls.

Hypotheses

For this study the following hypotheses were formulated:

A nursing intervention using the telephone to provide information to MI patients during the home convalescent period will increase patient knowledge in the following areas:

- H₁ health deviation, its effect and related self care measures as compared with MI patients who do not receive telephone follow-up;
- H₂ medications when compared with MI patients who do not receive the telephone follow-up;
- H₃ therapeutic diet when compared with MI patients who do not receive the telephone follow-up;
- H₄ recommended exercises when compared with MI patients who do not receive the telephone follow-up;
- H₅ physical activity restrictions when compared with MI patients who do not receive the telephone follow-up;
- H₆ recommended rest when compared with MI patients who do not receive the telephone follow-up.

Definition of Terms

Telephone Follow-Up - an interaction between the cardiac nurse specialist and the M.I. patient, family member or significant other via the telephone for the purpose of communicating educational information, from the nurse to the patient, and for the patient to voice concerns and questions to the nurse.

Myocardial Infarction - an area of myocardial injury as diagnosed by electrocardiographic changes, clinical symptoms, and serial cardiac enzymes.

Pretest - a set of questions designed to measure the patient's knowledge area, administered by structured interview just prior to the patient's discharge from hospital.

Post-test - a repeat administration of the pretest questions, by structured interview six to eight weeks following hospital discharge.

Home Convalescent Phase - a period of time immediately following discharge from hospital and prior to the time when the M.I. patient can safely resume activities of daily living. The length of this phase is dependent upon the severity of the illness and is generally considered to be six to eight weeks in duration.

Self-care - deliberate actions initiated and performed by an individual on their own behalf to maintain life, health, and well-being (Orem, 1980).

Therapeutic Self-Care Demand is the calculated and expressed totality of self-care actions to be performed for some duration in order to meet known self-care requisites of individuals by using valid methods and related sets of operations or actions (Orem, 1980).

Self-Care Agency is the power of individuals to engage in self-care. This power is a complex, acquired human characteristic, a capability for performing actions to (1) determine the kinds of self-care actions that are required, (2) make decisions about

engaging in the performance of self-care actions, and (3) the performance of specific self-care actions (Orem, 1980).

Nursing Agency is the complex set of specialized abilities acquired through specialized study and experience in nursing situations that enables nurses to diagnose, prescribe and provide care that compensates for or aids in overcoming the health-derived or health related self-care or dependent-care deficits of others in order to know and to meet existent therapeutic self-care demands (Orem, 1980).

Self-Care Deficit is that relationship between the therapeutic self-care demand and the self-care agency of an individual in which the capabilities for self-care are less than those required for meeting the therapeutic self-care demand (Orem, 1980).

Ethical Considerations

Introduction of community follow-up via telephone for post M.I. patients for the purpose of increasing patient knowledge and for documenting and responding to patient concerns was essentially a new service for patients at the hospital where the study was conducted. Prior to commencing the study the M.I. patients received one or two telephone calls from a Cardiac Rehabilitation Nurse during the convalescent period. This service was considered to be exploratory in nature and was designed with the intent of monitoring the rehabilitation progress of the patient during the first twenty-eight days post discharge from hospital as well as to

document the concerns of post M.I. patients. Referrals to other health personnel were initiated by the Cardiac Rehabilitation Nurse. Prior to the introduction of the program, the M.I. patient was routinely returned to the care of the general practitioner following discharge from hospital.

Random assignment of study patients to either a control or experimental group allowed for a comparison of outcomes of the two groups on the stated dimensions. Although this required withdrawal of a service routinely given to M.I. patients during the time-frame of the study, the service had not been considered an essential aspect of the rehabilitative care of the M.I. patient. In fact there was some question of its viability in the department, as there was no knowledge of the effectiveness of the program. There has been scant attention in the literature given to this time period during the rehabilitative phase for an M.I. patient. There was consensus amongst members of the Cardiac Rehabilitation Team at the hospital where the study was conducted that further research was needed on this aspect of cardiac rehabilitation before making any changes in the existing program.

Patients in both groups continued to be referred back to their general practitioners for follow-up care and both groups received appointments for the eight week post M.I. exercise stress test and appointments to visit their cardiologist at the outpatient clinic. This was arranged prior to discharge, the practice prior to the

commencement of the study. Patients requesting more information following administration of the pretest and/or post test were given brief answers to their questions by the interviewers and referred to either the Cardiac Rehabilitation Nurse or their general practitioners for further information. These sources of information continue to be considered the normal routes of enquiry for patients with questions. Patients in the experimental group received additional and reinforcement of information during the telephone follow-up. The telephone number of the Cardiac Outpatient Clinic was given to both groups who were assured that the Cardiac Rehabilitation Nurse could be contacted if questions and/or concerns arose. Thus all patients had access to the same resources.

All patients considered eligible to participate in the study were approached by the investigator approximately two to three days pre-discharge and asked if they would be interested in participating in the study. All patients expressing an interest in the study were given a copy of the consent form (Appendix N) to read and any questions regarding the study were answered by the investigator. All those who agreed to participate in the study signed a consent form and were informed that they could withdraw from the study anytime they desired to do so without jeopardizing their cardiological follow-up care. All patients not considered eligible for the study, who dropped out or refused to participate in the

study continued to receive routine follow-up care by the Cardiac Rehabilitation Nurse. As participation in the study simply involved teaching sessions with the Cardiac Rehabilitation Nurses about their M.I. and recommended lifestyle guidelines, there was no apparent risk to patients. It was thought that the "treatment" would increase knowledge and the patient's ability to care for himself.

Limitations of The Study

It was recognized that knowledge gains may not necessarily result in behavioral changes in the patient. Further, this study was not designed to measure behavioral changes and no attempt has been made to determine if a relationship appears to exist between these two variables in this study.

Limitations may be imposed by the use of the telephone as a means of communication; for example, nonverbal cues are often used to assess patient learning and to determine patient interest in the topic being discussed. These could be missed in telephone interactions. It is also possible that such psychological factors as anxiety, denial and anger frequently experienced by the M.I. patient may influence the learning process in some way. This study does not attempt to measure these psychological variables, but the use of random assignment of subjects to groups would account for such variables by distributing them equally across groups.

A further limitation is that the pretest may produce a testing effect where patients receiving the testing may be stimulated to seek answers to questions which they are unable to answer. The research question does not permit random selection of patients for the study, but random assignment of all patients eligible and willing to participate in the study to experimental and control groups strengthens internal validity by controlling the main effects of history, maturation, testing, and instrumentation. It is possible also that a Hawthorne effect may have been produced by the attention given to patients by the researchers.

The sample used in the study consisted of patients experiencing a myocardial infarction for the first time and not undergoing any surgical interventions during the time period between the pretest and post test, thus preventing findings being generalized to patients with more than one myocardial event and recent post surgical events. Patients were drawn from one teaching hospital in the greater Edmonton area with no attempt made to control or manipulate the in-hospital teaching program or attitudes toward patient teaching. The findings may not be generalized to patients with different sociodemographic characteristics nor to other settings.

Chapter II

REVIEW OF THE LITERATURE

Conceptual Framework

This study is based upon the self-care framework as outlined by Orem (1980). Self-care is described as "the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being". Self-care is seen as deliberate action which is: "based upon informed judgement about the outcome(s) being sought from acting in a particular way". To perform self-care the individual must both acquire and use the knowledge necessary to make appropriate health-related decisions. Motivation and skill are also considered necessary requisites to performing self-care. Orem (1980) expresses concern that patients may adapt themselves to chronic ill health if therapeutic self-care actions are not engaged in with the purpose of restoring health.

Nursing, according to the framework, is indicated when a deficit is identified between the individual's ability to perform self-care and the therapeutic self-care demand. Orem (1980) proposes a supportive-educative nursing role for patients who are able to perform self-care but cannot do so without assistance. Valid helping techniques in these situations include combinations of support, guidance, provision of a developmental environment, and teaching.

Levin (1978) makes a distinction between patient education and self-care education. His concern is that patient education is not directed toward achieving independence from the health care system but rather, for determining the needs, deciding upon acceptable outcomes, selecting a method appropriate to the condition, administering the educational treatment, and observing the results. Self-care education, by contrast on the other hand, allows the learner to determine his/her needs, educational content and treatment, and desired outcomes. This approach to patient education does not necessarily modify patient behavior to improve the health status but it may promote patient decision-making regarding acceptable lifestyle adjustments. Levin cautions that this may not always meet with professional approval as a patient may opt for quality of life values in preference to quality of health values.

Green (1980) encourages a number of approaches to patient education which can be used to define quality in patient education. He particularly recommends a diagnostic-experimenting approach to quality in patient education. This approach assumes a scientific body of knowledge and a theoretical background available to assess the needed characteristics of the educational content. This body of knowledge is then used to allow the professional to infer probable causes of the patient problem. Concepts of education are then used to plan the actions related to selection and application

of specific methods of teaching. This experimental, systematic practice then continues to feed back into the body of theoretical knowledge.

Although many patient teaching programs are designed to promote a healthier lifestyle for the M.I. patient post discharge by means of compliance with the medical regimen and modification of coronary risk factors, it would seem that in most cases the content of these programs is based more upon the health professional's judgement about what should be taught, rather than upon a theoretical framework for patient education. The M.I. patient has been studied for success of hospital teaching in the areas of knowledge gains and compliance. Studies both support (Pozen et al., 1977; Owens et al., 1978; and Scalzi et al., 1980) and refute (Bille, 1977; and Sivarajan et al., 1983) the position that patient education increases knowledge and/or compliance. Slight variations in educational program content are noted in these studies but the major areas of interest were the anatomy and physiology of the heart, the myocardial infarction and lifestyle risk modifications such as weight loss, cigarette smoking cessation and physical activity.

For the purpose of this study it was decided to use the self-care framework as outlined by Orem to study patient education for the M.I. patient. Because patient knowledge about the illness and recommended medical regimen may influence decisions about

self-care activities it would seem that this framework would be useful in studying these. Further, self-care activities are those which would promote and maintain life, health, and well-being.

Patient Education for the Myocardial Infarction Patient

The myocardial infarction (M.I.) patient has been studied and described in the literature as having a recognized set of characteristic reactions to the illness condition. The onset of a sudden, life-threatening illness, such as a M.I. often is accompanied by one or more psychological responses to this threat. Denial, anxiety and depression have been reported as a fairly common response (Wishnie et al., 1971; Granger, 1974; Stern et al., 1976, 1977; Wrzesniewski, 1977; Hackett and Cassem, 1978; Thomas et al., 1983). The degree and length of these responses reported for the post M.I. patients varies. Stern et al. (1976) reported a small number of follow-up patients who continued to be depressed up to one year following the cardiac event. Wrzesniewski (1977) found that the M.I. patient had a higher level of anxiety when compared with healthy persons and rheumatic patients 15-121 days following the event. Stern et al. (1976) found that patients who were anxious or depressed in hospital continued to be anxious or depressed at the six week follow-up with those reporting moderate-to-severe anxiety at six weeks and at one year fluctuating between 7% and 50%. Similar findings are reported by Wishnie (1971) during the M.I. patient's first month at home.

These psychological barriers have been identified as possibly interfering with the patient's learning process (Murdaugh, 1980). Murdaugh (1980) has outlined barriers to learning in the coronary care unit (C.C.U.). These barriers are related to a variety of socioculture, physiological and environmental factors that may be present when the teaching-learning process is being initiated. They include such things as age, economic status, sex, pain, and the hospital environment to name only a few. Barriers to patient teaching have also been identified (Murdaugh, 1980). They include such factors as lack of time and teaching skills of the nurses, and physician interference.

An interesting study on group education and anxiety by Wallace and Wallace (1977) was carried out on a group of 83 patients instructed in hospital. Such topics as the mechanism and management of myocardial infarction, the psychological aspects of the illness, and some of the lay misconceptions of the disease were covered. Reassurance (as far as medically justifiable) was given regarding the prognosis. The study showed an increase in anxiety for those taking part in the group education. Compliance with cigarette cessation was also poor with only 18 of the 45 smokers in the group quitting four months following hospitalization for the coronary event.

Patient compliance continues to be of importance to health professionals, particularly those who are attempting to modify

behaviors. The literature on M.I. patient knowledge gains and compliance is varied in its methodological approach and results obtained. Scalzi (1980) had limited success in knowledge gains related to coronary artery disease and risk factor modification following an in-hospital structured patient group as compared to a control group. Compliance was demonstrated for medication taking, dietary restrictions and weight reduction but not for smoking cessation. However, no statistically significant change occurred over a 24 month period. Scalzi (1980) concluded, following negligible improvement between pre and post test scores following the in-hospital teaching program, that "First, the patients' retention of information during hospitalization is limited. Second, continued instruction during the post discharge phase appears to improve knowledge and "reported" compliance in the following areas: medication, progression of physical activity, weight reduction, and treatment and reporting of chest pain and shortness of breath". She concluded that there was an apparent lack of instruction available for patients and families immediately after hospital discharge and that this may be a period when patients are more receptive to instructions due to the unexpected large number of questions received from patients during a 6 week post-hospital time period.

Sivarajan (1983) however, was unable to demonstrate compliance in the areas of cigarette smoking cessation, dietary modifications

or weight loss in a group of MI patients who returned for group teaching and counselling following discharge from hospital. Knowledge gains were not measured and the researcher questioned the effectiveness of group education and counselling for modifying individualized risk factors. This is contrary to a comparable study by Pozen et al. (1977) which reported the effectiveness of a hospital-based Rehabilitation Nurse in increasing return to work, improving patient knowledge and decreasing smoking. There were, however, no discernible differences between the study and control groups six months post discharge from hospital. McPhee et al. (1983) were also unable to demonstrate differences in the areas of knowledge of diagnosis, symptom status, activity level, medication knowledge and compliance, appointment keeping and rates of rehospitalization one month after discharge among four groups of patients who had either had a physician who had received a 35-minute tutorial on how to conduct a discharge interview, had received a 15-minute discharge interview from an investigator, had received both interventions or had received neither intervention.

Other studies have used a variety of instructional methods to increase knowledge of the M.I. patient. Gregor (1981) increased knowledge scores using an instructional booklet and reported retention of information two weeks following discharge. Fournet (1974) showed increases in knowledge of diuretics following

individualized teaching with an even greater increase obtained when a printed booklet was added to the verbal instruction. Similar results were shown in a study by Hageman and Ventura (1981) in increasing medication knowledge in two of five areas being tested. Structured patient teaching incorporating audiovisual material has been compared to informal patient teaching (Milozzo, 1980) and to a lecture-style educational program (Morley, 1984). Greater knowledge gains were documented in the group of patients receiving the structured education program incorporating the audiovisual material. Rahe et al. (1975) were unable to demonstrate knowledge gains of M.I. patients following a planned patient teaching program but speculate that this may have been due to the lack of reliability of the test instrument. Kubinec (1982) was also unable to demonstrate knowledge gains in a small random sample of cardiac patients who participated in a structured Cardiac Rehabilitation Course designed for outpatients who were interested in acquiring more knowledge related to coronary artery disease.

Telephone Follow-Up Use by the Health Care Team

Wishnie, Hackett, and Cassem (1971) identified the transition from hospital to home as frequently resulting in unsatisfactory adjustment with many conflicts arising between the patient and his/her family over interpretation of the physician's orders and the implications of the illness. Bilodeau and Hackett (1971) describe some common concerns raised by MI patients immediately

following discharge from hospital as being related to the nature of the illness, medications, nutrition, medical care following discharge, smoking, work and activities, illness and death of other MI patients, attitude of the family, and current and future states of health. Granger (1974) suggests the use of telephone contact with the MI patient immediately following discharge from hospital may be one method to reduce anxiety and fear. This use of bi-weekly telephone follow-up calls was initiated by Bilodeau and Hackett (1971) as a way to maintain interest and provide expression of concern and questions. Other researchers have used the telephone as a method of providing follow-up for the M.I. patient (Pozen, 1977; Billie, 1977; Hackett and Cassem, 1978; Owen et al., 1978; Prince et al., 1983) but none researched this mode of communication as a way to increase knowledge levels related to the illness and its recommended lifestyle adjustments.

Daltroy (1985) used the telephone as a method to provide educational counselling to a group of cardiac patients in an effort to increase attendance in the first three months of outpatient cardiac exercise programs. Zimney et al. (1980) used the telephone follow-up as a method to provide quality assurance in a tertiary care center in Minneapolis, U.S.A. for all departments except the area of mental health. The telephone follow-up calls were undertaken to evaluate quality in the following areas of medical care: access to medical care, services provided, discrepancies

between the record and the patients' perceptions, and patient compliance and understanding. The authors noted that after experimenting with various sample sizes that 20 patients seen in a single department during a specified time interval brought out the same kinds of problems as did phone calls to 250 patients as long as the sample was relatively homogeneous. Owens et al. (1978) gave patients the telephone numbers to call if questions arose after discharge but none utilized this service even though they had questions when contacted by the investigator. Questions were frequently asked about diet, medications, and the symptoms they were experiencing.

The management of five common acute pediatric problems by pediatric nurse practitioners, pediatric house officers, and pediatricians was evaluated by taping telephone calls to the three groups and scoring them for history taking, disposition and interviewing skills. The pediatric nurse practitioners scored higher in all areas than the other two groups using the telephone (Perrin and Goodman, 1978). Prince et al. (1983) selected the telephone as the preferred method for monitoring cardiac patients' stress level on a monthly basis once they had been discharged home from hospital. The investigators felt that this method had advantages for their purposes over a face-to-face administration of a questionnaire because it would be less costly and might interfere to a lesser degree with the patients' stress levels.

It was also considered to be more desirable than using the mail because of the reported low rate of returns by mail and the time delay in receiving the questionnaires. Use of a tape recording of the questionnaire over the telephone was also ruled out because it was considered to be too impersonal and the allotted time for patients to answer each question before the next question was asked might be too short for some patients or too long for others creating frustration with answering the questions.

The review of the literature indicates that use of the telephone to provide follow-up care can be both effective and efficient. The majority of Canadians have access to a telephone and are familiar and at ease with its use. Although questions arise as to whether it might be too impersonal, the literature has not reported this to be a problem when investigators have used it to contact patients. It would appear that factors such as the previous relationship between the patient and the caller, disposition and interviewing skills of the caller, and the purpose of the call as it is perceived by the patient might have the greatest influence on the outcome of the telephone call. In fact, it might be speculated that in some instances patients might be more willing to reveal information that they consider to be of a personal nature over the telephone because it is less embarrassing under these circumstances than eye-to-eye contact with the interviewer.

Chapter III

METHODS AND PROCEDURES

The study is descriptive-comparative in design. It was hypothesized that a telephone follow-up intervention by a Cardiac Rehabilitation Nurse with the purpose of teaching patients during their first six to eight weeks at home would increase patient knowledge in the areas of: (a) the health deviation, its effect and related self-care measures; (b) medications; (c) therapeutic diet; (d) recommended exercises; (e) physical activity restrictions and; (f) recommended rest. A total of fifty-one subjects completed the study.

All subjects eligible for the study were randomly assigned to either a control or experimental group. The majority of the pre-test interviews were conducted by the investigator while the post-test interviews were conducted by a research assistant "blind" to the randomization of the group assignment. A second interviewer acted as a passive observer during the post-test interviews. The second interviewer was permitted to clarify questions asked to the patient or the patient's answers, but did not directly participate in the post-test interview.

Instrumentation

The pre and post-tests were based upon criterion measures of nursing care developed by Horn and Swain (1977). These criterion measures were developed using conceptual framework outlined by Orem

(1980) as their basis. Measures focus on specific aspects of the patient's physical and emotional status, the extent of health knowledge, and ability to perform self-care. The instrument has been designed to be administered by the interview method.

Inter-observer reliability for 109 out of 414 quality measures was determined by the authors. Criteria established for the final determination of reliability were (1) a sample reliability index of at least .80 (2) confidence interval of 95% and (3) lower bound of the confidence interval to exclude the reliability index of .60.

An additional 171 measures either met two of the three criteria or had no confidence bounds determined due to absolute agreement ($r=1.00$). One hundred and eight of the measures need further testing because inter-observer reliability was not established for these measures. Content validity was established for all 539 measurements using the technique of Nunally and Durham (1975).

Selection of the Questions

Horn and Swain (1977) outline two components of health status measures of nursing care for adult medical-surgical hospitalized patients. According to Orem (1980), the universal component deals with those requisites which are common to all human beings to bring about "the internal and external conditions that maintain structure and functioning..." (p. 42). The second component, health deviation requisites, exists for all persons who are ill or

injured. They represent those requisites that are carried out in an effort to restore normalcy.

As the purpose of the research was to evaluate the knowledge of M.I. patients in relation to their ability to perform self-care measures once they were discharged home, it was decided to select the interview questions from the health deviation component. Areas selected from the health deviation component for inclusion in the pre and post-tests were medications, diet, physical activity restrictions, recommended exercises, recommended rest and the health deviation and its related effects. Questions from these areas were selected from the Horn and Swain instrument for inclusion in the pre and post-tests by the investigator (Appendices A to F). The questions were then submitted to three Cardiac Nurse Specialists for evaluation in clarity, relevance to the M.I. patient and completeness of each section to gain the information necessary to meet the stated purpose of each component. A small number of changes to the wording of questions resulted from the feedback provided by the Cardiac Nurse Specialists.

Scoring of the Instrument

A total of 72 questions were selected for inclusion on the teaching program. The health deviation, its effect and related self-care measures (Appendix A) includes 13 questions related to the diagnosis, symptoms and causal factors of the M.I., and self-care practices following discharge from hospital. The

therapeutic diet teaching component (Appendix B) includes 14 questions related to the patient's knowledge of the diet, the relationship between the therapeutic diet and health and the patient's knowledge about meal preparations and daily adjustments needed to maintain the therapeutic diet. Appendix C outlines the 21 questions selected to ascertain the patient's knowledge of medications. Patients were tested on one cardiological medication in the area of name, reason for, dose, action, side effect, treatment of side effects, and independent actions in preparing and managing taking of medications. Physical activity restrictions (Appendix D) were tested by 8 questions selected to determine the patient's knowledge of the type, necessity for and length of time of physical activity restrictions. One question in this component was to determine how the patient would handle any of physical activity restrictions that might be considered inconvenient in an effort to determine the patient's ability to follow the recommended physical activity restrictions or to make appropriate adjustments for them. Recommended exercises (Appendix E) consisted of 9 questions selected to determine the patient's knowledge of the type of exercise recommended, benefits and situations when exercises should or should not be performed. One question was included in this component to determine how patients planned to handle any circumstances that made it difficult or inconvenient for them to perform the exercises. Knowledge of recommended rest (Appendix F)

was determined by 7 questions which assessed the patient's knowledge regarding the type of rest recommended, the reason for and circumstances which might interfere with obtaining the recommended amount of rest.

The questions selected for each component of the interview were paired with acceptable answers (Appendices G to L) and in some instances, a specified number of correct responses were determined before a question could be considered totally correct. For example, what symptoms might indicate to you that another heart attack was occurring? Patient was required to give at least three of a possible 10 symptoms to be considered correct. Patients who knew one or two correct symptoms were considered to be partially correct and those who knew no symptoms or responded incorrectly were considered to be incorrect. The specific directions for scoring the patient knowledge scores were based upon those developed by Horn and Swain (Appendix M).

For purposes of analyzing the data a value was assigned to the response choices. Responses considered correct were assigned a value of 1, responses considered partially correct were assigned a value of .5, and responses which indicated that the patient did not know or was uncertain about the answer, and those which were judged to be incorrect were assigned a value of 0.

Selection and Training of the Research Assistants

A notice asking for nurse volunteers to participate in the research was posted on three cardiology medical and surgical units in the hospital where the study was conducted. Nine nurses responded to the notice. All nurses agreed to participate in the study on a volunteer basis. The Research Assistants were required to act as interviewers to conduct structured pre and post-test interviews. All volunteers were registered nurses with a minimum of two years cardiology experience. Volunteers were orientated to the research study and the role that the interviewers would play in the data collection. Copies of the interview questions and some of the acceptable answers for each question were distributed to each volunteer. Approximately two weeks later each nurse volunteer conducted an interview with the investigator role-playing a myocardial infarction patient ready to be discharged home. Each interview was conducted with only the interviewer and the "patient" present in the interview room. The "patient" gave standardized answers to each question and did not volunteer any information that was not directly asked. The interviewer's scores were compared with the pre-determined answers of the investigator. Agreement ranged from 61.2% to 88.5%.

Three of the volunteers dropped out of the study prior to commencement of the data collection. One volunteer moved away from the area and two others were unable to participate due to other

commitments. The six remaining volunteers participated in at least one other interview with a myocardial infarction patient prior to discharge from hospital. These were considered to be practice sessions and scores were not included in the data analysis.

Selection of the Sample

All patients entering the coronary care unit with a diagnosis of M.I. were considered eligible to participate in the study except those falling within the following categories. Patients excluded from the study included those unable to communicate in the English language, disoriented to time, place or person, history of previous M.I., and those not having access to a telephone. Consideration was given to those with hearing and/or speech impairments on an individual basis. Patients with a psychiatric history or considered too ill to complete the interviews were not included in the study. A small number of M.I. patients transferred from the CCU to a general medical floor rather than to the cardiology/medical floor were not included in the study. Patients who indicated that they could not or would not return to the clinic for the two month follow-up appointment were also considered ineligible. Patients readmitted for coronary bypass surgery prior to completing the post-test and those who could not be reached for more than one telephone teaching session were also dropped from the study.

The Setting

The study was carried out in a large university teaching hospital. During the course of this study patients suspected of having had a myocardial infarction were admitted to a five-bed acute coronary care unit, progressed to a four-bed step-down unit and finally to one of two cardiology/medical floors located in the hospital. Each patient was assigned to a staff cardiologist following transfer to the cardiology/ medical floor. Each cardiology/medical floor had access to the services of a dietician, psychologist, and social worker. Patient teaching on these floors was essentially unstructured although nursing staff are responsible for teaching certain selected topics related to the M.I. patient prior to discharge and all M.I. patients received a copy of a teaching booklet to take home. The nursing staff were responsible for the medication teaching to all patients prior to discharge.

The teaching given was dependent upon the individual skill and interest of the assigned nurse and the amount of time available for teaching. Filmstrips, models and booklets were available to the staff for the purpose of patient teaching. The cardiologist was responsible for providing information related to the illness and its prognostic implications for the patient. Upon discharge from hospital the patient was returned to the care of the general practitioner.

The Cardiac Rehabilitation Unit was located within the hospital and continued follow-up evaluation of the patient post discharge. Contact was made with the patient in hospital by the Cardiac Rehabilitation Nurse and an activity home program is outlined. A follow-up appointment was made prior to discharge from hospital. The patient returned to the clinic approximately six to eight weeks post infarction to have an exercise stress test and to see the cardiologist. Compliance with the follow-up visit was very high.

Data Collection

Research subjects were interviewed just prior to discharge from hospital, usually within less than six hours, although a small number of patients had their discharge delayed following the completion of the pretest interview for medical reasons. The pretest interview however, was not administered until the nursing staff on the patient's unit indicated that all predischARGE teaching was completed. A data sheet (Appendix O) was completed by the investigator for each research subject enrolled in the study. Patients who were unexpectantly discharged from hospital prior to the administration of the pretest were asked to complete the structured interview in their home within one to four days post discharge. A total of five subjects missed while in hospital did not live within a reasonable driving distance from the hospital and the pretest was completed over the telephone. Three of these five

subjects completed the post test and were included in the study. An appointment to return to the clinic in approximately six to eight weeks was given to each patient prior to discharge.

Patients were randomly assigned to either the experimental or control group using by a table of random numbers. Then a starting number was randomly selected prior to beginning the study following which all patients with an even number were assigned to the experimental group and those with an odd number to the control group. Random assignment to groups was determined when the patient was discharged. Both groups received a card prior to discharge with the Cardiac Rehabilitation Nurse's name and telephone number at work and told they or members of their families might call to report concerns or to ask questions. In addition, the experimental group were told that the Cardiac Rehabilitation Nurse would be telephoning them within a week on a mutually agree upon day and time. All patients completed the post test upon return to the outpatient clinic at the prearranged appointment date (see figure 1).



O = pretest and post test

X = telephone follow-up calls

The assignment of X to one group or the other is assumed to be random and under the experimenter's control.

Figure 1 The Nonequivalent Control Group Design (Adapted from Campbell and Stanley (1963), p. 47).

A Research Assistant "blind" to the randomization of the group assignment conducted the post test interview. A second Research Assistant acted as observer during the post test interview. The approximate time for each interview was 35-40 minutes for both the pre and post test interviews.

A follow-up questionnaire (Appendix P) was filled out by the investigator following a brief discussion of the questions with the patient. The questionnaire was designed to determine the patient's main source of information about his/her M.I. and recommended lifestyle changes while at home, and the number of times that the patient used health care personnel and facilities during the convalescent period, other than regularly scheduled appointments.

The M.I. Telephone Teaching Program

Two Cardiac Rehabilitation Nurses and the investigator participated in the telephone teaching program. All three nurses were accustomed to patient follow-up via the telephone in the rehabilitation program at the hospital although a structured teaching program had not previously been followed. The telephone follow-up calls initiated by the Cardiac Rehabilitation Research Nurses (C.R.R.N.) provided an opportunity to reinforce information already provided and to supplement information that may not have been covered by the hospital nursing staff. A nursing assessment of the areas outlined for study was based upon the patient's pretest prior to discharge from hospital and the patient's ability to address the topic areas with accuracy. This was individually assessed during each telephone conversation by the Cardiac Rehabilitation Research Nurses. The C.R.R.N. reinforced, clarified or introduced new information based upon this nursing assessment. The teaching was individualized and addressed the following areas: the M.I. and its effects, medications, therapeutic diet, recommended exercises, physical activity restrictions, and recommended rest.

Time allotted to each knowledge area was dependent upon the patient's difficulty or ease remembering and/or understanding the information provided. Time was provided for patients to discuss other concerns and each telephone session was terminated only after

the C.R.R.N. asked the patient if there were any questions or concerns they wished to discuss. Each telephone call was taped and it was planned that each patient in the experimental group would be telephoned three times. Additional telephone follow-up was based up on the nurse's assessment of the patient's knowledge of the educational content areas and the patient's need for further follow-up.

Data Analysis

The groups were analyzed for heterogeneity by measuring the mean for age and educational levels. Equal numbers of males and females were found to be in each group. A Pearson Moment Correlation was computed to determine if relationships existed between the six teaching areas. A paired t-test for differences in means between the observer and interviewer scores on each of the six teaching areas was carried out to determine if the structured interview method interacted with the treatment to produce the main effect. An independent t-test was used to analyze difference scores of the interviewers and observers (across the treatment and control groups) in each of the six teaching areas to determine if the effect produced by the interviewers themselves had interacted with the treatment to produce the main effect.

Once the content areas being measured were shown to be independent of each other, a nondirectional t-test $\alpha = 0.05$ was used to determine if a change in knowledge levels between the two

groups had occurred. The independent t-test is appropriate for sample sizes greater than or equal to thirty. The intra-class correlation coefficients (I.C.C.) were calculated using the one way repeated measures analysis of variance (ANOVA) model to establish reliability between the interviewers and observers. Patient and family concerns and questions, as well as the subsequent nursing actions resulting from the questions and concerns were categorized and described as percentages within categories.

Chapter IV

RESULTS

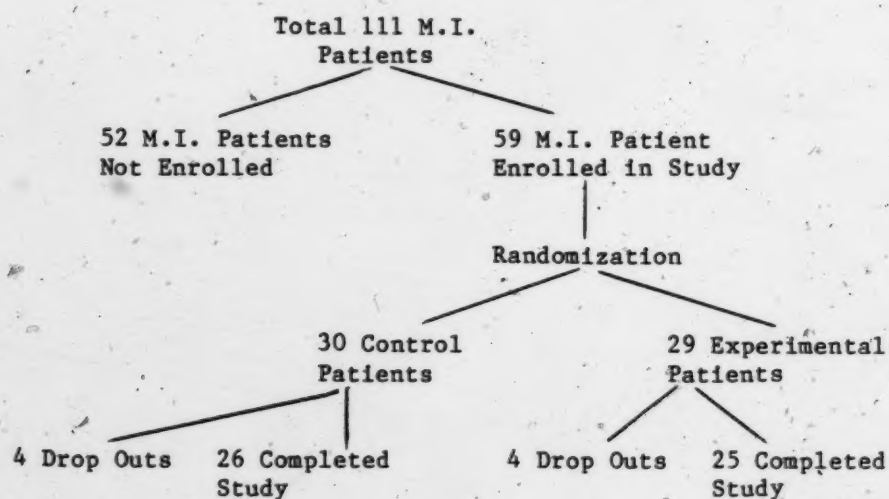
The purpose of this study was to investigate the use of the telephone follow-up as a method of increasing self-care knowledge of the M.I. patient during the initial 6-8 weeks following discharge from hospital. The study focused on knowledge in the areas of 1) M.I. and its related effects, 2) medications, 3) therapeutic diet, 4) physical activity restrictions, 5) recommended exercise, and 6) recommended rest. The telephone follow-up calls were taped and the verbalized questions, concerns and symptoms experienced of the patient were categorized.

A total of 59 subjects (see Table 1) were enrolled in the study. Each subject completed a pretest interview either just prior to discharge from hospital or immediately following. Subjects were then randomly assigned to either a control or experimental group. The experimental groups received two to four telephone follow-up calls from a Cardiac Rehabilitation Research Nurse (C.R.R.N.) while they were convalescing at home. The purpose of the telephone calls was to provide the patient with that information in the areas where a deficit in knowledge was identified on the pretest.

Telephone follow-up calls were taped and the content reviewed by the investigator. Each patient completing the study was administered a post test upon return to the Cardiology Outpatient

Clinic approximately six to eight weeks following discharge from hospital. The post test was conducted by a Research Assistant "blind" to the patient randomization with an observer present who also scored the post test.

Table 1

Assignment of Patients to Groups and Attrition

Description of the Sample

A total of 111 confirmed M.I. patients were admitted the hospital where the study was being conducted during the time frame of the study. Fifty of the subjects did not meet the criteria outlined in the study for subject participation and two subjects approached refused to participate in the research. Fifty-nine subjects met the study's admission criteria and agreed to participate. Thirty subjects were assigned to the control group and twenty-nine to the experimental group (see Table 1). There were four drop-outs in each groups (see Table 2). In the control group two subjects became too ill to return to complete the post test, one subject refused to complete the post test and one subject was not able to return prior to the completion of the study to complete the post test. One subject in the experimental group became too ill to complete the post test, two subjects went for coronary artery bypass surgery during the six to eight convalescent period and one subject was reached only once for a telephone follow-up call. A total of fifty-one subjects completed the research study. There were 26 subjects in the control group and 25 subjects in the experimental group.

Table 2

Reasons for Drop-Out from Study

Experimental Group	n	Control Group	n
Had Coronary Artery Bypass Surgery	2	Too ill to complete post test	2
Too ill to complete post test	1	Refused to complete post test	1
Insufficient number of telephone follow-up calls	1	Too late to complete post test	1

Experimental-Control Group Background Comparisons

Information collected on the study group for comparison was age, sex and educational level. As indicated in Table 3, there was a proportionally larger number of males than females in both groups. There was a total of 23 males and 3 females in the experimental group and 21 males and 5 females in the control group.

Table 3

Comparison of Groups by Sex

Sex	Experimental	Control
Male	22	21
Female	3	5

The average age (Table 4) of the experimental group was 51.6 years of age with a median of 52 years of age. The average age of the control group was 54.3 years of age with a median of 56.5 years of age.

Table 4

Comparison of Groups by Sex

	Average Age	Median Age	Range
Experimental Group	51.6 years	52.0 years	21-77 years
Control Group	54.3 years	56.5 years	24-83 years

The educational level was determined by the number of years of schooling each patient had received. Included were years spent at a vocational or trade courses from a recognized vocational institution. Table 5 shows the comparison in educational level between the two groups.

Table 5

Comparison of Groups by Educational Level

Years of Schooling	Experimental	Control
< 6 years	0	0
6-8 years	9	2
9-10 years	5	10
11-12 years	3	8
13-16 years	8	4
17 years plus	0	2

Eight patients in the experimental group had an educational level greater than high school and six patients in the control group had an educational level beyond high school. Nine patients in the experimental group as compared to two patients in the control group had from six to eight years of schooling.

Description of the Knowledge Level Findings

Pearson correlation were computed using an interviewer and observer gain scores (post test - pretest) to determine if the six teaching areas were related in content. Table 6 shows that very small correlations exist among the six teaching areas when the interviewer post test scores were correlated with the pretest scores. Similarly there were no noticeable correlations when the observer post test scores were correlated with the pretest scores (Table 7). Therefore the six teaching areas were considered to be independently different in content.

Table 6

Correlation Matrix of Interviewers Gain Scores (Post test -
Pretest) on Each of the Six Teaching Areas

Var.	M.I.						
M.I.	1.00	Diet					
Diet	.24	1.00	Med				
Med.	-.14	.08	1.00	P.A.R.			
P.A.R.	.15	.30	.17	1.00	Exer.		
Exer.	.12	.23	.22	.27	1.00	Rest	
Rest	.19	.20	-.05	.31	.20	1.00	TOTAL
TOTAL	.44	.65	.55	.61	.58	.49	1.00

Key to Abbreviations

Var. - Variable
M.I. - Myocardial Infarction
Diet - Therapeutic Diet
Med. - Medications
P.A.R. - Physical Activity Restrictions
Exer. - Recommended Exercise
Rest - Recommended Rest

Table 7

Correlation Matrix of Observer Gain Scores (Post test - Pretest)
on Each of the Six Teaching Areas

Var.	M.I.						
M.I.	1.00	Diet					
Diet	.15	1.00	Med.				
Med.	-.21	.14	1.00	P.A.R.			
P.A.R.	.01	.22	.28	1.00	Exer.		
Exer.	.06	.12	.19	.20	1.00	Rest	
Rest	.29	.13	-.15	.11	.10	1.00	TOTAL
TOTAL	.37	.61	.58	.55	.53	.40	1.00

Key to Abbreviations

Var. - Variable
M.I. - Myocardial Infarction
Diet - Therapeutic Diet
Med. - Mediations
P.A.R. - Physical Activity Restrictions
Exer. - Recommended Exercise
Rest - Recommended Rest

Table 8 shows the correlations of gain scores between interviewers and observers scores on each of the six teaching areas. Once again there does not appear to be any substantial correlation between the different components where teaching was given. The diagonal of the matrix shows a high correlation between observers and interviewers scores on each teaching area indicating a high agreement between the interviewers and observers.

Table 8

Correlation Matrix of Gain Scores Between
Interviewers and Observers

Var.	M.I.	Diet	Meds.	P.A.R.	Exer.	Rest	TOTAL
M.I.	.93	.19	-.20	.12	.15	.23	.38
Diet	.22	.98	.07	.32	.21	.19	.63
Meds.	-.14	.14	.99	.20	.22	-.06	.56
P.A.R.	.03	.21	.26	.93	.18	.17	.49
Exer.	.02	.15	.17	.25	.93	.15	.47
Rest	.27	.14	-.15	.26	.15	.93	.42
TOTAL	.40	.62	.55	.63	.59	.46	.97

Key to Abbreviations

Var. - Variable
M.I. - Myocardial Infarction
Diet - Recommended Diet
Meds. - Medications
P.A.R. - Physical Activity Restrictions
Exer. - Recommended Exercises
Rest - Recommended Rest

A paired t-test for differences in means between interviewer and observer scores on each of the six teaching areas was carried out (Table 9) to determine if the structured interview recording methods interacted with the treatment to produce the main effects. Only one significant result was obtained in the teaching area entitled physical activity restrictions.

Table 9

Paired T-test for Differences in Means Between Interviewers and
Observer Scores on Each of the Six Teaching Dimensions

Var.	Number of Cases	Mean	S.D.	T Value	D.F.	2-tailed Prob.
Int. M.I.	51	7.76	13.61	0.31	50	0.755
Obs. M.I.		7.54	13.68			
Int. Diet	49	11.57	15.61	-1.03	48	0.307
Obs. Diet		12.01	15.61			
Int. Meds.	44	11.82	17.65	1.75	43	0.088
Obs. Meds.		11.01	17.94			
Int. P.A.R.	51	9.45	16.70	2.36	50	0.022*
Obs. P.A.R.		7.40	16.45			
Int. Exer.	51	10.41	19.81	0.71	50	0.483
Obs. Exer.		9.69	20.43			
Int. Rest	51	1.83	18.10	-1.04	50	0.304
Obs. Rest		2.81	17.69			
Int. TOTAL	51	9.3098	9.498	1.22	50	0.227
Obs. TOTAL		8.9272	8.835			

*Significant at $\alpha = 0.05$

Key to Abbreviations

Int. - Interviewer	Meds. - Medications
Obs. - Observer	P.A.R. - Physical Activity Restriction
M.I. - Myocardial Infarction	Exer. - Recommended Exercises
Rest - Recommended Rest	

Table 10 compares difference scores, which were obtained by observer gain scores. The table compares the six teaching areas by group to determine if there was an interaction effect between the recorders and the treatment in the two groups. None of the t-values reached a significance. The final statistical analysis was an nondirectional independent t-test between groups for each of the six teaching areas (Table 11). Using the average gain score of the observer and interviewer this analysis of the data produced significance in the teaching areas of the M.I. ($t = 2.31, p < .025$) and recommended exercise ($t = 2.87, p < 0.006$). Significance was achieved when all the teaching areas were combined together ($t = 2.77, p < 0.008$). No significant results were observed for diet, medications, physical activity restrictions and rest.

Table 10

Difference Scores Between Interviewer and Observer
Scores by Groups in Each of the Six Teaching Areas

Var.	Number of Cases	Mean	S.D.	T. Value	D.F.	2-tailed Prob.
<u>M.I.</u>						
Experimental	25	0.22	3.75	0.01	49	0.995
Control	26	0.21	5.98			
<u>Diet</u>						
Experimental	23	0.22	2.91	1.47	47	0.149
Control	26	-1.03	3.01			
<u>Medications</u>						
Experimental	24	0.35	2.10	-1.10	42	0.280
Control	20	1.36	3.93			
<u>*P.A.R.</u>						
Experimental	25	2.57	7.59	0.58	49	0.566
Control	26	1.56	4.66			
<u>Exercise</u>						
Experimental	25	1.95	3.57	1.18	49	0.243
Control	26	-0.46	9.58			
<u>Rest</u>						
Experimental	25	-1.47	5.86	-0.50	49	0.618
Control	26	-0.51	7.57			
<u>TOTAL</u>						
Experimental	25	0.58	1.86	0.62	49	0.541
Control	26	0.19	2.57			

*P.A.R. - Physical Activity Restrictions

Table 11
Independent T-tests Between Groups for Each of
the Six Teaching Areas

Var.	Number of Cases	Mean	S.D.	T-Value	D.F.	2-tailed Prob.
<u>M.I.</u>						
Experimental	25	11.89	11.96	2.30	49	0.025*
Control	26	3.58	13.69			
<u>Diet</u>						
Experimental	23	14.48	15.53	1.16	47	0.250
Control	26	9.40	15.01			
<u>Medications</u>						
Experimental	24	14.68	17.33	1.35	42	0.184
Control	20	7.50	17.84			
<u>*P.A.R.</u>						
Experimental	25	12.00	12.95	1.56	49	0.126
Control	26	4.99	18.56			
<u>Exercise</u>						
Experimental	25	17.64	19.32	2.88	49	0.006*
Control	26	2.75	17.64			
<u>Rest</u>						
Experimental	25	1.60	17.55	-0.28	49	0.777
Control	26	3.01	17.92			
<u>TOTAL</u>						
Experimental	25	12.50	7.80	2.77	49	0.008*
Control	26	5.87	9.22			

*P.A.R. - Physical Activity Restrictions

* Significance @ $\alpha = 0.05$

Reliability of Interviews and Observers

Intra-Class Correlation (I.C.C.) was calculated using the one way repeated measure Analysis of Variance (ANOVA) model to estimate reliability between the interviewers and observers. The ANOVA results may be summarized using the following table.

ANOVA Table

Source of Variation	SS	DF	Mean Square	F	Prob.
Between patients	SS_A	$I-1$	MS_A	MS_B/MS_E	
Between observers	SS_B	$J-1$	MS_B		
Errors (or Residuals)	SS_E	$(J-1)(J-1)$	MS_E		

Where I = number of patients
 J = number of observers

Then ICC may be estimated by:

$$ICC = (MS_A - MS_E) / (MS_A + (J-1) MS_E)$$

Using this formula I.C.C. estimates were obtained as outlined in Table 12. The I.C.C. estimates are consistent with those in Table 8 when a Pearson correlation was carried out using the gain scores between interviewers and observers. The diagonal of the matrix gives identical agreement scores to the I.C.C. scores and indicates a high agreement between interviewers and observers. The Pearson correlation was 0.97 when all teaching areas were calculated together.

Table 12

Intra-Class Correlation (I.C.C.) Scores of Interviewers
and Observers for each of the Six Teaching Areas

Variable	I.C.C.	Pearson Correlation
M.I.	0.933	0.933
Diet	0.981	0.981
Medications	0.985	0.985
*P.A.R.	0.929	0.925
Exercise	0.933	0.934
Rest	0.929	0.929

*P.A.R. - Physical Activity Restriction

Description of the Telephone Follow-Up Call Findings

A total of twenty-nine patients in the experimental group were telephoned by the Cardiac Rehabilitation Research Nurses (C.R.R.N.). Each patient was telephoned one to four times with an average of three telephone calls made to each patient. All telephone calls were taped and then reviewed by the investigator. Telephone calls varied from five minutes to thirty minutes in length. The first telephone follow-up call was initiated approximately one week following the patient's discharge from hospital, although this varied according to the availability of the patients. The second telephone call was made approximately one

week later and further follow-up calls were made one to two weeks following the second telephone call.

Twenty-seven patients telephoned, verbalized concerns and/or symptoms they had been experiencing while at home to the C.R.R.N. Two patients did not verbalize any particular problems and the C.R.R.N. used the telephone calls to conduct the educational sessions only. The C.R.R.N. began each telephone conversation with a question about the patient's state of health and directly asked if the patient had any questions, concerns or problems that they would like to discuss. This was repeated at least once more before the close of the telephone call, thus allowing each patient an opportunity to verbalize concerns or to ask questions.

A total of seventy-nine telephone calls were made and 225 concerns, questions and/or symptoms experienced were verbalized by the patients. Twenty-four patients verbalized concerns and symptoms more than once in subsequent telephone calls. A total of 172 concerns, questions and experienced symptoms were verbalized at least once by patients. An outline of the characteristics related to the telephone follow-up calls is provide in Table 13 below.

Table 13

Characteristics of the Telephone Follow-Up Calls

	n
Total number of patients telephoned	29
Total number of patients who verbalized concerns and experienced symptoms	27
Total number of telephone calls	79
Total number of concerns and experienced symptoms verbalized at least once by patients	172
Total number of concerns and symptoms verbalized by patients	225

Description of the Telephone Follow-Up Sample

The sample included twenty-five males and four females with an age range of 21 years to 77 years. As can be seen in Table 14 almost half of the sample were over 51 years. The mean age for the sample was 51.9 years. The median age was 52 years.

Table 14

Age Distribution of the Telephone Follow-Up Group

Age	n	N = 29
21-30	1	
31-40	5	
41-50	7	
51-60	7	
61-70	8	
71-80	1	

The educational level was determined by the number of years of schooling. Included were vocational or trade courses from a recognized vocational institution. Sixteen or 55% of the sample, as indicated on Table 15, had ten years or less of schooling.

Table 15

Educational Level of the Telephone Follow-Up Group

Years of Schooling	n	N = 29
6 - 8 years	9	
9 - 10 years	7	
11 - 12 years	3	
13 - 16 years	9	
17 years plus	1	

Description of Telephone Follow-Up Call Findings

Questions, concerns and symptoms experienced were categorized under one of six general headings (see Table 16).

Table 16

Concerns and Symptoms Verbalized by Patients

	N = 172
A. Concerns related to effects of M.I. and recommended lifestyle changes	27.3%
B. Experienced symptoms other than cardiac	24.4%
C. Concerns related to follow-up care	18.0%
D. Experienced possible cardiac symptoms	15.1%
E. Concerns related to medications	12.2%
F. Concerns Related to personal or home problems	3.0%

The greatest number of concerns were related to the effects of the M.I. and the recommended lifestyle changes. Table 17 outlines more specifically the expressed concerns and questions within this category.

Twenty patients were concerned about recommended lifestyle changes. Nine of these patients were concerned about dietary changes and four about the length of time that lifestyle restrictions would be necessary. There were two patients who were

concerned about the recommended amount of rest necessary and two were concerned about weight loss. The remainder of concerns were each verbalized once by a patient and included concerns about gaining weight, use of alcohol and cigarette smoking cessation..

Nineteen patients expressed concerns about physical activities while at home. Within this group, twelve patients had questions related to the amount of recommended exercise that they should be performing. Questions about each of the following situations were verbalized twice: working around the house, resumption of automobile driving and attending functions outside the home. One patient expressed concerns related to resuming sexual activity.

Four patients expressed some concerns related to recognizing symptoms that might indicate cardiac pain. One of these patients had experienced pericarditis and was concerned with being able to differentiate between pericardial pain and angina. Three patients had questions relating to the pathophysiology and cause of the M.I. and one patient had a question regarding the regulation of his blood pressure.

Table 17

Concerns Related to Effects of M.I.
and Lifestyle Changes

Expressed concerns and questions related to:		n
1.	recommended lifestyle changes	19
2.	amount and type of activity allowed	20
3.	inability to diagnose chest pain symptoms	4
4.	pathophysiology and cause of M.I.	3
5.	blood pressure	1

The second largest number of concerns are related to symptoms experienced by patients that were not considered to be cardiac in nature. They are outlined in Table 18 and are grouped under three general headings. Twenty-six patients verbalized a variety of physical symptoms excluding those considered by the investigator to be cardiac in nature. Five patients complained of dizziness and there were three complaints each of headache and fatigue. There were two complaints of each of the following symptoms: upset stomach, constipation and generally "not feeling well". The remainder of physical ailments were each verbalized once and included hip pain, numbness in hand and arm, blood taste in mouth, changes in body temperature, arthritis, blurred vision with headaches, excessive perspiration, having a head cold, and

frequency in voiding. Nine patients verbalized changes in their sleep patterns and seven patients complained of psychological symptoms. There were three complaints of boredom, two complaints of depression and one patient complained of experiencing a greater amount of irritability and anger than was normal for him.

Table 18

Experienced Symptoms Other than Cardiac

Symptoms Experienced:	n
1. physical symptoms, such as dizziness, upset stomach, arthritic pain and excessive fatigue	26
2. problems with sleep pattern	9
3. psychological symptoms, such as depression, boredom and irritability	7

Eighteen percent of the concerns related to follow-up care. Table 19 indicates that there were thirteen concerns related to medical tests results and medical procedures that had either been performed or were to occur at a later date. There were three concerns regarding each of the medical procedures, coronary angiogram and exercise stress testing. Two patients were unsure where to go to have their blood work taken and there was one question asked about each of the following: prothrombin

regulation, lung scan results, x-ray results, readmission to hospital, and the research study. There were eight questions about the follow-up visit to the cardiologist and two requests for referrals to the outpatient cardiac rehabilitation program. There were eight concerns expressed about follow-up visits to the general practitioner. In this group, four patients were unsure about when to make their first appointment with the general practitioner, two patients expressed a lack of confidence in the general practitioner and two more felt they were having problems communicating with the general practitioner about their medical problems.

Table 19

Concerns Related to Follow-Up Care

Expressed concerns and questions related to:	n
1. medical test results and medical procedures	13
2. follow-up visit to cardiologist and rehabilitation program	10
3. follow-up to general practitioner	8

Table 20 outlines the type of possible cardiac symptoms verbalized by patients. Sixteen patients reported having had some type of chest pain or discomfort and the following symptoms were verbalized each three times: shortness of breath and indigestion-like symptoms. There

were two complaints of each of the following: irregular heart beats and neck and shoulder pain.

Table 20

Experienced Possible Cardiac Symptoms

Symptoms Experienced:	n
1. chest pain or chest discomfort	16
2. indigestion-like symptoms	3
3. shortness of breath	3
4. irregular heart beats	2
5. neck and shoulder pain	2

There were twelve concerns related to medications, other than nitroglycerine tablets. There were four questions about medication side effects and there were two voiced concerns about each of the following: the need for the medication, the interactions of one medication with another and the appropriate time to take a medication. One patient had concerns about the long term use of medications and another wanted further information regarding the type of medication being taken. There were eight concerns that were specifically related to the administration of nitroglycerine tablets and one patient reported that he had taken a double dose of his medication. Table 21 provides an overview of the concerns that patients verbalized related to their medications.

Table 21

Concerns Related to Medications

Expressed concerns and questions related to:		n
1.	taking of medications (excluding nitroglycerine) the need for, side effects, effects of long term use, type taken, interactions, time of administration	12
2.	taking of nitroglycerine tablets	8
3.	error in medication and administration	1

A small number of personal or home problems reported by patients are given in Table 22. Three patients had concerns related to their finances while they were convalescing, one patient was concerned about his spouse's health and another patient complained that her spouse was being too over-protective.

Table 22

Concerns Related to Personal or Home Problems

Expressed concerns and questions related to:		n
1.	finances	3
2.	spouse's health	1
3.	spouse's over-protectiveness	1

Nursing Actions Based on Verbalized Questions.

Concerns and Reported Symptoms

Each telephone follow-up call was reviewed by the investigator for the nursing actions which resulted from the verbalized questions, concerns and/or reported symptoms. A total of 293 nursing actions were identified and they were grouped, as given in Table 23, according to the frequency with which they were used by the Cardiac Rehabilitation Research Nurse (C.R.R.N.). In some instances more than one nursing action was used in relation to a reported concern. For example, a patient asked if his wife could add salt to his food while it was being prepared. The C.R.R.N. taught the necessity for salt restriction and the recommended allowance but also gave permission for the spouse to add a small amount of salt to food in preparation.

Even though all patients were told that they would be telephoned by the C.R.R.N. to provide further information related to the material covered in the pretest, many patients continued to ask for specific information related to the M.I. and its related lifestyle changes, diet, medication, physical activity restrictions, recommended exercises and the recommended rest. The C.R.R.N. allowed each patient telephoned an opportunity to verbalize their questions, concerns and to report any problems they might have experienced. Following this, the C.R.R.N. reviewed the areas on the pretest that indicated that further information was

needed by the patient. This structured teaching was not included in the total number of nursing actions. Only that teaching which was done in response to a direct question or concern from a patient is included in Table 23 and constitutes 31% of the total number of nursing actions.

Table 23

Nursing Actions

Type of Action* . N = 293	Percentage of times nursing action was used
1. Taught or gave information in relation to a specific problem (answered questions)	31%
2. Carried out nursing assessment by asking relevant questions	17%
3. Suggested patient contact another health professional	10%
4. Provided approval, support or reassurance	10%
5. Listened (no follow-up action suggested)	6%
6. Gave permission to do an activity	6%
7. Suggested ways to deal with specific problem based on medical knowledge	5%
8. Promised to contact another health professional about patient	4%

9. Suggested a possible explanation for specific problem	4%
10. Suggested ways to deal with specific problem based on common sense or non-medical knowledge	2%
11. Discussed specific problem but offered no solution or action to take	2%
12. Suggested postponing further information or action until follow-up tests completed	2%
13. Promised to relay further information to patient	1%
Total	100%

* All patients were taught and given specific information in relation to the M.I. and its related lifestyle changes, diet, medications, physical activity restrictions, recommended exercises and rest.

Questions and Concerns Verbalized By Spouses by Telephone

Four spouses asked to speak to the C.R.R.N. while she was speaking to the patient during the telephone follow-up calls. The spouses were female in all cases. One spouse spoke to the C.R.R.N. during two separate telephone follow-up calls. Prior to the patient's discharge from hospital, the Cardiac Rehabilitation Research Nurse indicated that they would be willing to answer questions or listen to any concerns that they or their family members might have regarding the patients' M.I. or follow-up care. They were told that they could either telephone the C.R.R.N.

directly or wait until the C.R.R.N. telephoned them to ask questions or voice concerns. As indicated in Table 24, a total of 13 concerns were verbalized by the spouses. Five concerns were related to activities such as, resumption of automobile driving and the prescribed walking program. Four concerns were related to the effects of the M.I. on the patient's physical health. One spouse was concerned about her husband's poor skin colour since the M.I. and another expressed feelings of anxiety that her husband might have recurrent cardiac problems. One spouse was concerned about the follow-up appointments to the cardiologist and another spouse was concerned about where the results of her husband's blood work would be forwarded to and asked for the telephone number of her husband's cardiologist. One spouse felt her husband was experiencing chest discomfort.

Table 24

Questions and Concerns Verbalized By Spouses

Expressed questions and concerns related to:	n
1. activities allowed	5
2. the M.I.'s effect on patients' physical health	4
3. follow-up care	3
4. possible cardiac symptoms	1

Questions, Concerns and Symptoms Experienced by

Control Group Reported by Telephone

Thirty patients were assigned to the control group. They were given the name and work telephone number of one Cardiac Rehabilitation Research Nurse (C.R.R.N.) and told to telephone if they had questions or concerns while at home during the next six to eight weeks. Six patients telephoned the C.R.R.N. on their own initiative. The C.R.R.N. completed a telephone follow-up form (appendix Q) following each conversation. The telephone conversations were approximately ten to twenty minutes in duration with a mean of 14 minutes.

Four patients reported having experienced angina-like symptoms since their discharge from hospital. There were two reported concerns regarding each of the following: taking prescribed medications, follow-up care and physical symptoms, such as, a pounding heart, light headedness and swollen feet and ankles. One patient complained of claustrophobia and asked for a referral to see a psychologist. For further information regarding the concerns and reported symptoms of the control group refer to table 25. It is interesting to note that of the six control patients who telephoned the C.R.R.N., two had notified their general practitioner and one had gone to the Emergency Room prior to the telephoning to discuss their concerns and symptoms with the Cardiac Rehabilitation Research Nurse.

Table 25

Concerns and Symptoms Experienced Reported by
Telephone by the Control Group

Concerns and Symptoms Experienced:	n
1. Experienced angina-like symptoms	4
2. Expressed concerns about taking prescribed medications	2
3. Complained of other physical symptoms	2
4. Complained of claustrophobia	1
5. Asked for referral to psychologist	1

Summary

Patient's concerns, questions and verbalized symptoms were categorized under six general headings. They included 1) concerns related to effects of the M.I. and recommended lifestyle, 2) experienced symptoms other than cardiac, 3) concerns related to follow-up care, 4) experienced possible cardiac symptoms, 5) concerns related to medications, and 6) concerns related to personal or home problems. A total of twenty-nine patients were telephoned. Twenty-seven patients expressed at least one concern or question. A total of 225 concerns and symptoms were verbalized by the patients telephoned. A number of concerns and symptoms were

verbalized by the same patients more than once, leaving a total of 172 different concerns and symptoms verbalized at least once by patients.

Four spouses expressed concerns and questions to the C.R.R.N. and six patients in the control group initiated telephone calls to the C.R.R.N. to express concerns and report symptoms they had experienced. Thirteen categories of nursing actions were established based upon the reported questions, concerns and verbalized symptoms. The C.R.R.N.'s were able to deal directly with the questions, concerns and reported symptoms 86 percent of the time. The nurses referred the patient to another health professional in only 14 percent of the total nursing actions. The most frequently used nursing action used by the C.R.R.N.'s was to teach or give information in relation to a specific problem.

Chapter V

DISCUSSION AND RECOMMENDATIONS

Discussion of Findings

In this study the investigator examined telephone follow-up calls as a method to increase knowledge in the areas of the myocardial infarction, its effect and related self-care measure, therapeutic diet, medications, physical activity restrictions, recommended exercises and recommended rest for the post myocardial infarction patient six to eight weeks post discharge from hospital. Specifically, the patient's knowledge in the above mentioned areas was measured following two to four telephone teaching sessions and compared with that of a group of patients who did not receive this intervention. The study also categorized patient's questions, concerns and reported symptoms as verbalized by the patients on the taped telephone calls. Nursing actions related to the verbalized concerns and symptoms experienced were also determined by reviewing the taped telephone follow-up calls and they were then categorized under general headings.

All subjects eligible to participate in the study were randomly assigned to either the treatment or the control group and were pretested by the structured interview method on the six selected teaching areas. A total of fifty-one subjects completed the post test structured interview approximately six to eight weeks post discharge from hospital.

The structured interview questions (Appendices A to F) were adopted from criterion measures of nursing care developed by Horn and Swain and were based upon the self-care framework outlined by Orem. Questions were selected for each teaching area and an optional level of knowledge was predetermined for each question based upon Horn and Swain's correct response list and the philosophy of the cardiology department regarding cardiac rehabilitation practices in the selected teaching areas. Subjects were scored using Horn and Swain guidelines (Appendix M) and the judgements of the Research Interviewers in scoring the questions were based upon the predetermined correct response list (Appendices G to L) and by the discharge orders recorded on the patients data sheet (Appendix O).

A. Knowledge Gains in the Six Areas where Teaching was Given

(a) The M.I., Its Effects and Related Self-Care Measures

Study results showed that Hypothesis I was supported. There was a statistically significant difference in the knowledge level of the experimental group as compared with the control group ($t = 2.31$, $p < 0.025$) following the telephone teaching sessions in the area of the M.I., its effect and related self-care measures.

Prior to discharge, patients in the hospital where the study was conducted received instruction from medical and nursing personnel and audiovisual and written materials were available to provide information about the pathophysiology of the heart. Even

so it appeared that the retention of this information could be greatly increased through the use of telephone teaching sessions during the first two months at home. This agrees with the findings of Pozen et al. (1977) who found that the study group knew more about the signs and symptoms of an M.I. one month after discharge than did the control group. The study group in this case had had information taught in hospital reinforced over the telephone by the Cardiac Rehabilitation Nurse while the control group had had no telephone follow-up during this time period. Scalze et al. (1980) suggested, following a study on an inpatient education program in coronary care, that "retention of information during hospitalization is limited" (p. 852). It is important that M.I. patients understand their disease and its implications if they must make appropriate choices to bring about a safe and optimal level of functioning.

Pretest questions relating to the causality of the M.I. (Appendix A, Questions 3a and 3b) were answered correctly by about 51% of the sample. The remaining patients either did not know what coronary artery disease was, answered incorrectly or were only partly correct. It might be speculated that patients who viewed their M.I. as an isolated incident, and not as a long term illness, might not be as likely to comply with recommended lifestyle changes over an extended period of time. Scalzi et al. (1980) were unable to demonstrate any statistically significant differences in the

compliance of cessation of cigarette smoking and dietary restriction over a twenty-four month period following the inpatient teaching program. However, there was only a negligible improvement in the pre and post test knowledge scores of the experimental group.

McShane (1979) using the Horn and Swain instrument also found that M.I. patients, six to eight weeks following hospital discharge, were unable to accurately describe their own health problems, related symptoms, anatomy, and physiology in technical or non-technical terms. Also only 10-30 percent were able to optimally identify appropriate measures to control and/or decrease health problems after discharge, identify appropriate modifications in post-discharge daily routine necessitated by health problem, and correctly identify situations related to particular health problems in which professional health care assistance would be needed. She recommended that nursing follow-up contact be extended after discharge.

(b) Therapeutic Diet

Hypothesis II was not supported in this study. There was no statistically significant difference found in the knowledge level of the treatment group as compared with the control group ($t = 1.16$, $p < 0.252$) following the telephone teaching sessions in the area of the therapeutic diet. One to one dietary instruction by a dietitian or in a one hour group session was available to all

M.I. patients and their spouses in the hospital where the study was conducted. The therapeutic diet taught was based upon Canada Food Guide with a no added salt restriction. Foods high in cholesterol were reviewed and patients were encouraged to limit cholesterol intake but strict adherence to cholesterol high foods was not emphasized unless patients had a previous history of hypercholestermia. Patients were also cautioned to reduce their sugar intake, particularly if they were overweight, but mainly to encourage a more healthy eating lifestyle. Written material was available to take home outlining the dietary guidelines.

Two patients in the treatment group were on special diets and so were not instructed about the cardiac diet. These two patients were not tested on the therapeutic diet component of the teaching program. Six patients in the treatment group and seven patients in the control group did not recall having seen the dietician or attending the diet lecture prior to discharge from hospital. Although there was no statistically significant difference in the two groups it was observed that there was a difference in the means between the two groups with the experimental group having a mean of 14.48 and a S.D. 15.53 and the control group having a mean of 9.40 and a S.D. 15.01. This would indicate that a greater increase occurred in the knowledge level of the experimental group as compared with the control group.

Access to dietary information about low cholesterol diets is commonly found in newstand journals, paperback books, newspapers and on television and the radio. People are generally aware that there is a relationship between heart disease and diet and may be more likely to seek out this information once they are at home. Patients may also feel that they may have some control over modifying this risk factor. Dietary recommendations for the prevention of heart disease are easily accessible to the public and the choice and preparation of the recommended foods is generally easy to understand. Even patients who had not seen the dietician in hospital generally were able to describe accurately what foods high in cholesterol which should be avoided or limited in the diet.

The nature of the therapeutic diet questions (refer to Appendix B) might also have influenced the mean score of the control group. Only four of the questions dealt directly with knowledge questions about the diet. The remainder of the questions dealt with the individual's ability to follow the diet at work and on social occasions and where and from whom they could obtain further information about the diet. Patients from the control group were generally aware that the dietician was available for further information or knew of another source, but it is uncertain if they in fact contacted these resources for further dietary instructions. They also often had a plan for following the diet at

work or on social occasions but may not have necessarily had the correct information on dietary restrictions.

(c) Medications

Hypothesis III was not supported in this study. There was no statistically significant difference in the knowledge level of the treatment group as compared with the control group ($t = 1.35$, $p < 0.186$) following the telephone teaching sessions in the area of medications.

Medication teaching was carried out in the hospital where the study was conducted by the nursing staff. A card with the name of the medication, common side effects and therapeutic action of the drug were included on the card which the patient is able to take home. Medication teaching was usually not carried out until just prior to discharge. The medications on which the patient was to be discharged were usually not known until that time. Special attention was given to the administration of nitroglycerine tablets as the majority of patients were prescribed this medication.

Seven patients were discharged home without cardiovascular medications or without a prescription for any medication. These patients were not tested on the medication knowledge component. One patient was in the experimental group and six were in the control group. Patients who were discharged home on more than one cardiovascular drug were tested on only one of the medications. The medication to be used for knowledge testing was selected by the

investigator. Nitroglycerine was not chosen unless the patient was discharged home on no other cardiovascular drugs.

A fairly strong difference in means between the groups indicated a greater increase in the knowledge level of the experimental group than the control group. The experimental group had a mean of 14.68 with a S.D. of 17.33 while the control group had a mean of 7.50 with a S.D. of 17.84.

There is some evidence that patients do forget information about their medications after hospital discharge even if they have had structured teaching (Pozen, et al. 1977; Scalzi, et al. 1980; Curran, 1978; McPhee, et al. 1983). Patients often seemed disinterested in their medications. They verbalized that they had trouble remembering the names and dosages of their pills. Patients would frequently recall having heard of some side effects to their medications but would say they had forgotten them or would confuse them with the side effects of another medication they were taking. Many patients felt that they could rely on their memory to remember to take their pills and were often resistive to suggestions by the C.R.R.N. that they should have a plan or system to help them remember other than relying on their memory.

Many patients in the study had problems remembering the names, dosages and side effects of their medications. This might be explained by the difficulty that many patients felt in pronouncing the names of the medications and patients were not familiar with

the milligram measurement. Patients might also feel it unnecessary to know more about their medications because they do not feel that they have any option but to take the drugs prescribed and also may view it as something which should not cause them any harm because it was prescribed to improve their condition. Unlike dietary recommendations, information regarding medications is not readily available.

(d) Physical Activity Restrictions

Hypothesis IV was not supported in this study. There was no statistically significant difference in the knowledge level of the treatment group as compared with the control group ($t = 1.57$, $p < 0.124$) following the telephone teaching sessions in the area of physical activity restrictions.

Physical activity restrictions for M.I. patients were taught by the nursing and medical staff in hospital. This information was further reinforced by a hospital visit from the Cardiac Rehabilitation Nurse and written material was provided on the topic to be taken home by the patient. The experimental group had a mean of 12.00 and a S.D. of 12.95 while the control group had a mean of 4.99 and a S.D. of 18.56. Again strong directional differences between the two groups were noticed.

This component of the interview was designed to determine if patients know what activities they cannot do or can only do with modifications while at home during the first six to eight weeks.

The interview was also designed to determine if the patient understood the length of time the restrictions were recommended, why they were recommended and if the patient had a plan to handle situations which might occur but for which restrictions were imposed (refer to Appendix D).

These restrictions were of particular interest to most patients as they affect their everyday functioning. Patients were concerned about what they will be allowed to do when at home, i.e., automobile driving, climbing stairs and returning to work. As these daily functions are of interest and importance to most patients it may be that these patients were more likely to question medical and nursing personnel about these restrictions prior to hospital discharge. After discharge they may also be more likely to seek out this information from their general practitioner and from written material. Patients may also be more likely to retain this information after discharge from hospital as it is relevant to the patient's immediate situation.

The physical activity restrictions determine when patients will be allowed to return to work or to resume doing their housework. Patients were frequently dependent on driving their cars to perform errands, to go to work and for socializing. As driving means mobility and is a link to the community, it is understandable that patients would be concerned about this information because the restrictions may bring about major

adjustments within the family or for the individual immediately upon discharge from hospital. Scalzi et al. (1980) demonstrated that continued instruction to M.I. patients after hospital improved knowledge and compliance in physical activity and resumption of sexual activity, while McPhee et al. (1983) demonstrated that only 45% of medical patients surveyed one month after hospital discharge remembered being instructed about their activities while in hospital. No short term teaching interventions were used to reinforce information during the one month interval and no significant difference in knowledge level was found between a control group and three predischARGE interview intervention groups.

It appears that the structured interview recording methods may have interacted with the nurse-patient interactions by telephone to produce the main effect (Table 9) in the area of physical activity restrictions. PredischARGE instruction in this area varied somewhat with the patient's medical condition and with the physician's philosophy on what type and how soon activities can be resumed after an M.I. There was flexibility in these recommendations in the hospital where the study was conducted as patients are assessed by their Cardiologist on an individual basis prior to determining what physical activities must be modified, how much they must be modified and for what length of time. Interviewers and observers may have had difficulty measuring patients on this area by using the interview correct answer guide

as they might not have agreed with the instructions given to the patient by the Cardiologist or the Cardiac Rehabilitation Nurse.

(e) Recommended Exercises

Hypothesis V was supported in this study. There was a statistically significant difference in the knowledge level of the treatment group as compared with the control group ($t = 2.87$, $p < 0.008$) following the telephone teaching sessions in the area of the recommended exercises.

The usual recommended exercise for M.I. patients following hospital discharge was a prescribed walking program. This program was usually taught by the Cardiac Rehabilitation Nurse in the hospital where the study was conducted. Written material was also provided outlining a home walking program.

The recommended exercises, like the physical activity restrictions, would appear to have relevance to the patient at the point of hospital discharge, and immediately following, until the return to the Outpatient Clinic for further medical evaluation. The recommended exercises are the main type of activity that M.I. patients are encouraged to do during the six to eight week convalescent period. The experimental group in this teaching area showed a statistically significant increase in knowledge following the telephone teaching as compared with the control group. Specific directions related to this information was not easily accessible to patients once they have left the hospital.

to verify follow-up care instructions. The C.R.R.N. also arranged a number of referrals to the dietician, psychologist and the patient's cardiologist.

The C.R.R.N.'s also felt that there were a number of benefits for the practicing nurse by utilizing the telephone as a method for follow-up and for providing information to discharged patients. Hospital based nurses were able to liase with the C.R.R.N. about the patient's readiness to learn, teaching areas missed, or needing further reinforcement allowing the C.R.R.N. to continue the patient education begun in hospital. The C.R.R.N. is able to provide individualized telephone follow-up for a relatively large group of patients. Each telephone teaching session lasted approximately twenty minutes. The C.R.R.N. was also provided with an opportunity to follow the patient's progress while at home and usually had developed a rapport with the patient, and in some instances the family, prior to the patient's return to the Cardiac Outpatient Clinic.

C. Findings Related to Questions, Concerns and Reported Symptoms

This study indicates that many M.I. patients have questions and concerns once they are discharged home from hospital. The most frequently reported concern was related to the effects of the heart attack and recommended lifestyle changes (27.3%). Bilodeau and Hackett (1971) found that a commonly raised issue amongst M.I. patients during group sessions was related to the nature of the

Directions for walking programs were available in reading material taken home from hospital but patients not contacted by the C.R.R.N. by telephone had few other resources to provide them with specific exercise instructions. Twelve patients telephoned at home during the study period verbalized concerns about the amount of recommended exercise they should be doing to the Cardiac Rehabilitation Research Nurses (C.R.R.N.).

Another reason for the significant increase on knowledge levels in the experimental group could have been due to the emphasis and time allocated to the topic by the C.R.R.N. during the teaching sessions. All three of the C.R.R.N.'s had extensive experience as Cardiac Rehabilitation Nurses teaching the M.I. patient about their own individualized program while at home. This teaching area had been a focal point of the telephone follow-up calls previously undertaken in the Cardiac Rehabilitation Program at the hospital where the study was conducted. The walking program was usually outlined just prior to the patient's discharge from hospital and decisions about how much each patient could attempt to walk while at home were based largely upon the patient's performance at the time of the predischARGE low level treadmill test. The Cardiac Rehabilitation Nurses in the program reviewed the walking instructions with the patient at the time of the first telephone call and then provided additional information regarding increasing or decreasing the walking program based upon the

stability of the patient's medical condition, weather conditions or reported incidents of suspected angina pectoris. The taped telephone follow-up calls reflected a continuation of this information to the experimental group by the C.R.R.N. even if this information was not explicitly sought by the patient.

(f) Recommended Rest

Hypothesis VI was not supported in this study. There was not a statistically significant difference in the knowledge level of the treatment group as compared with the control group ($t = -0.28$, $p < 0.777$) following the telephone teaching sessions in the area of recommended rest.

Recommended rest activities for M.I. patients were taught by the nursing and medical personnel in the hospital where the study was conducted. The Cardiac Rehabilitation Nurse also reviewed the type and amount of rest recommended during the convalescent period at home. In this teaching area the experimental group had a mean of 1.60 and a S.D. of 17.55, whereas the control group had a greater mean of 3.01 and a S.D. of 17.92.

It is difficult to determine why the treatment group had less knowledge about the recommended rest than the control group. It might be speculated that the treatment group spent more time reviewing the other five teaching areas with the C.R.R.N. because it was these areas where patients usually had the greatest deficit in knowledge. The control group, on the other hand, may have

utilized their written material from the hospital more frequently than the experimental group. The written material referred to the need for extra rest for the M.I. patient and why this was important for the healing of the damaged heart. A great deal of emphasis on rest also came from the Health Care Team during the patient's hospitalization. This contrasted with the emphasis that the C.R.R.N. placed on the promotion of an increasingly active lifestyle during the home convalescent period. This may have influenced patients in the experimental group to think more about recommended activities than about recommended rest.

B. General Findings of Knowledge Levels for the Control and Experimental Groups

It can be concluded from the findings of the study that the telephone follow-up calls for the M.I. patient during the first six to eight weeks post discharge from hospital produced an overall significant increase in knowledge ($t = 2.77$, $p < 0.008$) in the areas of the M.I. and its related effects, recommended diet, medications, physical activity restrictions, recommended exercise and recommended rest. Although this method for teaching M.I. patients following hospital discharge has received scant attention in the research literature, a number of researchers have suggested that this method of follow-up should be further explored (Bilodeau and Hackett, 1971; Granger et al, 1974; Owen et al., 1978). There also appears to be some agreement amongst patient education

researchers that further reinforcement information is necessary for most patients once they leave hospital if they are to be expected to assimilate and retain information over time (Pozen et al., 1977; McShane, 1979; McPhee et al., 1983; Scalzi et al., 1980; Moynahan, 1984).

Telephone teaching has not been adequately explored as an alternate method for continuation of patient education following hospital discharge. A number of benefits can be assumed for both the patients and the staff through the use of the telephone as a method for follow-up and teaching. Patients do not need to reside in the urban area to continue to have access to the expertise that is found in large teaching hospitals and only have to have access to a telephone to continue to utilize these resources. Many patients expressed relief that a nurse would be telephoning them at home and no patients approached refused to participate in the study because they did not want to be telephoned by the nurse. Patients also did not have to make arrangements to travel to the hospital for further education lectures during this time period. This is particularly important for the M.I. patient who is instructed to get additional rest at this time and are usually advised not to drive an automobile. Patients were also able to obtain information about their condition and/or make referrals to other members of the Health Care Team through one individual. The C.R.R.N. was frequently asked to find out the results of tests for patients and

illness. They found that this issue was raised nearly 70 percent of the time during their first three meetings as patients struggled "to understand and accept the illness and its implications". Pozen et al. (1983) also found that the majority of problems identified in their follow-up study of M.I. patients were related to the impact of cardiac disease on the patient's lifestyle. Both studies demonstrate similar ranking of concerns as outlined in this study except that the studies by Bilodeau and Hackett and Pozen et al. ranked concerns about work high when all concerns were analyzed. This was not reflected in this study. No patients expressed concerns about returning to work. Patients verbalized a greater number of non-cardiac symptoms to the C.R.R.N. than cardiac symptoms. It is important to note that 72 percent of the patients telephoned reported angina-like symptoms. In all reported cases of possible anginal symptoms the C.R.R.N. probed for further information about the symptom experienced. The C.R.R.N. then acted on the information gathered to advise the patient further. No attempt was made in this study to determine if the nursing assessment of the patient's pain was accurate.

Only four spouses asked to speak to the C.R.R.N. while she was speaking to the patient even though spouses were invited to telephone or speak to the C.R.R.N. if they so desired. The spouses who did speak to the C.R.R.N. appeared to be anxious regarding their husband's condition and said that they wished to speak

directly to the C.R.R.N., rather than through their spouses, because they wanted to hear for themselves what she had to say. They indicated that they did not trust their husbands to relay the information back to them accurately. The telephone follow-up intervention was considered by spouses of M.I. patients as a way to increase knowledge about their spouses M.I. and its implications for lifestyle changes. It might also have been beneficial in reducing anxiety related to the effect of the M.I. for both the patient and the family

Although many patients do experience a great many concerns, questions and symptoms while convalescing at home, this study indicates that few will use the telephone follow-up service on their own initiative, even though they are invited to do so by the C.R.R.N. Only 23 percent of the patients in the control group initiated telephone calls to the C.R.R.N. and four of the six patients who telephoned had experienced anginal-like symptoms. Two of these patients had notified their general practitioner and one had gone to the Emergency Room prior to telephoning the C.R.R.N. It might be speculated that the patients telephoned the C.R.R.N. to verify the advice given by the general practitioner or the hospital staff. The C.R.R.N. might also have been viewed as a vehicle through which they could update their cardiologist about their condition. There did not appear to be major differences in the utilization of the Health Care System by the patients when the two

groups were compared. Information reported on the follow-up information sheet (Appendix P) at the time of the post-test showed that in the experimental group three patients visited the Emergency department for cardiac complaints and one patient was readmitted for observation. The control group had a slightly higher use of health care facilities with three patients returning to the Emergency department for cardiac complaints. All three patients were readmitted to the hospital for observation.

Patients did not appear to resent or dislike the telephone follow-up calls. Although only seven patients in the treatment group identified the C.R.R.N. as their main source of information, while at home they were receptive to the idea of the telephone calls and a number of patients expressed their relief that the C.R.R.N. had kept contact with them. One patient in the control group stated that she had not slept for two night after the discharge from hospital and "felt deserted".

D. Discussion of Findings Related to Nursing Actions

The Cardiac Rehabilitation Research Nurses used a variety of nursing actions to deal with the questions and concerns verbalized by the M.I. patient over the telephone. The most frequently used nursing action used by the C.R.R.N. was to teach or give specific information in answer to patient's questions and concerns. The nurses however, dealt directly with the questions, concern, or reported symptom 86 percent of the time. The nurses referred the

patient or promised to refer the patient to another health professional in only 14 percent of the total nursing actions.

Nurses dealt with the reported questions, concerns and symptoms using their general nursing knowledge and skills in many instances. Patients utilized the telephone calls from the C.R.R.N. to verbalize other than cardiac related concerns and symptoms. There were nine patients who complained of changes in their sleep pattern. An assessment of the patient's present sleeping pattern occasionally showed that the patient was sleeping too often throughout the day and the C.R.R.N. advised the patient to avoid daytime naps and to rest only when tired. This particular concern was then monitored during the subsequent telephone calls and if the problem persisted, the C.R.R.N. suggested that the patient discuss it further with the general practitioner.

There were 23 patients who complained of a variety of other physiology symptoms and six patients who verbalized psychological symptoms such as depression or boredom. In all instances, the C.R.R.N. assessed the symptom and implemented an action based upon the assessment. A similar pattern was followed by the C.R.R.N. when dealing with questions and concerns in the other categories. Concerns related to follow-up care were generally answered directly by answering the question or relaying information. No attempt was made in this study to determine if the nursing actions were appropriate for the issue raised. Perrin and Goodman (1978)

however, were able to demonstrate that pediatric nurse practitioners were better at managing common pediatric problems over the telephone than house officers or practicing pediatricians. The Cardiac Rehabilitation Research Nurses in this study were all experienced nurses with an extensive cardiology background specific to cardiac rehabilitation.

Recommendations

This study has implications for nursing practice, administration, research and education. Based upon the results of the study the following recommendations are offered for consideration:

Nursing Practice

Patients in this study who received the telephone follow-up calls acquired a greater level of knowledge in the teaching areas than did the control group. This finding suggests that patient education for the M.I. patient can be effective in the six to eight week period following hospital discharge.

Hospital nursing staff often become discouraged because patients do not always appear to remember the information that they have been taught in hospital. The teaching process begins in hospital but the lack of time to provide information and the patient's state of readiness to learn frequently provide barriers to completing the teaching process. It is the investigator's opinion that it is unrealistic for nurses to expect an M.I. patient

to leave hospital with the necessary knowledge to make recommended lifestyle changes and to make appropriate self-care decisions. It is recommended that hospital nursing staff and the Cardiac Rehabilitation Nurse collaborate in assessing, planning, implementing and evaluating the M.I. patients teaching program. It is also recommended that the patient's family be included in the teaching plan as they can be an important influence on the patient's willingness to make recommended changes and can provide accurate information and support to patients who are experiencing difficulty dealing with the illness and its long term health implications.

The Cardiac Rehabilitation Nurse must have special training and abilities in an number of nursing areas. This study indicated that the nurses teaching by telephone were required to be skilled in cardiac nursing to be effective in dealing with the questions, concerns and reported symptoms of the telephoned M.I. patients. It is recommended that nurses with a high degree of cardiovascular nursing skills and knowledge be utilized to provide the telephone follow-up calls. Nurses should also be selected based upon their expertise in the teaching process, should possess excellent communication skills and the ability to make sound decisions based on both medical and non-medical knowledge.

It is advocated that the nurse may be the appropriate member of the health care team to assist the patient to enter the health

care system. It is recommended that the Cardiac Rehabilitation Nurse be utilized in this fashion. The Cardiac Rehabilitation Nurses in the study assessed the patient's concern or symptom and referred the patient when necessary or when the patient requested a referral. The results of the study appear to indicate that the nurse was able to deal with the verbalized concerns and symptoms effectively but further research in this areas is recommended.

Nursing Administration

The results of the study suggest that the telephone may be an effective method for promoting learning for the M.I. patient following hospital discharge. Financial cutbacks in nursing have resulted in the withdrawal of patient services and nurse administrators are reluctant to implement programs which have not demonstrated effectiveness in research investigations. The telephone follow-up allows one or two nurses to teach and provide support to a large number of patients on a weekly basis. The nurses were also able to work with the inhospital Health Care Team to reinforce or provide additional information to the M.I. patient. This service may replace the need for a Cardiac Teaching Nurse in some institutions.

It is the particular concern of nursing administrators to provide a high quality of nursing care within the institution where they are employed. This type of patient education program has been known to be effective for increasing the M.I. patient's knowledge

while at home. Patients continue to receive quality care from the institution once they are discharged from hospital. The shortened hospital stay has raised concerns amongst hospital nurses related to adequate time to prepare patients to cope once they are at home. It is recommended that the telephone follow-up calls be used to provide continuation of educative and supportive nursing care for the M.I. patient once they have been discharged from hospital.

Nursing Education

Patient education has been recognized by the nursing profession as an important nursing function and nurses are now expected to carry this out as a part of their routine patient care. Nurses, however, cite many barriers to providing adequate patient education within the institution and often become frustrated because they feel that patients do not remember the information they have been given or are not yet ready to listen to and retain patient education teaching materials. This study indicates that patients do continue to learn with instruction via the telephone once they leave the hospital. Nurse educators must be able to assist the nursing student to understand the M.I. patients learning barriers within the phases of recovery and assist them to acquire the skills to accurately assess the patient's readiness to learn during each of these phases of recovery. The student must have knowledge about the concept of education and be able to select the appropriate teaching methods for each phase of recovery. The

student nurse must also be skilled in evaluating the patient's knowledge level prior to discharge from hospital so that a referral to nurses employed in outpatient settings can be made to continue the patient's educative process.

Emphasis on patient education should be given the same amount of attention as those courses which emphasize other basic nursing skills needed by the newly practicing nurse. Nurses cannot expect to promote lifestyle changes when patients are not aware of the implications of their actions nor what to do to promote a healthier lifestyle. Nurse educators who advocate a holistic approach to the care of the patient include patient education as an important component in the provision of patient care and must continue to evaluate student's skills in this area as carefully as they supervise their other clinical competencies.

Nursing Research

It is recommended that this study be replicated using a larger sample size and using other patient groups, including those patients who have had a recurrent M.I. The study suggest that patient can continue to learn about the M.I., its effects and the recommended medical regimen by means of the telephone following hospital discharge. It is recommended, however, that these patients be reviewed for knowledge gains over an extended period of time. It may be that programs should be longer to allow for

reinforcement of information or to deal with new questions or problems that arise once the patient returns to work.

The study suggests that patients have many questions and concerns once they have been discharged from hospital. More studies are needed to determine what information is appropriate to provide patients at various stages of the convalescence. This study also indicated that spouses may also have a number of concerns and it is recommended that descriptive studies which explore the questions and concerns of the spouse and families of the M.I. patient be undertaken by nurse researchers.

This study also indicated that the nurse who used the telephone to determine the patient's concerns and problems after discharge was required to utilize a number of nursing actions related to the questions and concerns. Nursing research studies are needed to determine if the nursing actions utilized by the Cardiac Nurses were appropriate. Studies should also be designed to determine if there is a difference in the appropriateness of the nursing actions between nurses with varying types of clinical and educative preparation.

It would also appear to be important at this time to determine the long-term benefits of patient education. Does it increase compliance with the medical regime and decrease readmissions to the health care system? Further, does it increase the ability of patient and family to respond appropriately to the illness or any

unexpected reoccurrences of symptoms or does it only help to provide a feeling for the patient that good health care has been received, thereby promoting a sense of security for the patient to cope with any future health problems that may occur?

Summary

This study was designed to measure the effectiveness of using the telephone for increasing self-care knowledge of the post myocardial infarction patient during the first six to eight weeks post hospital discharge. The study measured knowledge gains in the areas of: a) the health deviation, its effects and related self-care measures; b) medications; c) therapeutic diet; d) physical activity restrictions; e) recommended exercises; and f) recommended rest. A total of fifty-one patients were randomly assigned to either an experimental or a control group. The experimental group received approximately three telephone follow-up calls from a Cardiac Rehabilitation Research Nurse for the purpose of teaching the patient information about the six selected teaching areas. Deficits in knowledge was identified through the pretest administered prior to hospital discharge. Both groups were given a post test upon return to the Cardiac Outpatient Clinic.

A statistically significant ($\alpha = 0.05$) difference was obtained between the knowledge level of the experimental and control groups ($t = 2.77$, $p < 0.008$) when all teaching areas were averaged together. A statistically significant difference was produced

between the two groups in the areas of the M.I., its effects and related self-care measures ($t = 2.31$, $p < 0.025$) and recommended exercises ($t = 2.87$, $p < 0.008$). Although a statistically significant difference was not produced in the teaching areas of therapeutic diet, medications, physical activity restrictions and recommended rest, a greater mean was produced for the experimental group in all areas except recommended rest.

Patient's concerns, questions and verbalized symptoms were categorized under six general heading. They included: 1) concerns related to the effects of the M.I. and recommended lifestyle, 2) experienced symptoms other than cardiac, 3) concerns related to follow-up calls, 4) experienced possible cardiac symptoms, 5) concerns related to medications, and 6) concerns related to personal and home problems. The nursing actions initiated as the result of the questions, concerns and verbalized symptoms were categorized into thirteen categories. The nurses were able to deal with the questions, concerns or reported symptoms 86 percent of the time.

Finally, this study has raised a number of questions in the areas of nursing practice, administration, education and research which have been discussed above. Nurses continue to be concerned about the quality of nursing care that their patients receive. Much time, money and effort has been spent in an attempt to improve this aspect of nursing care, as evidenced by the appointment of

nurses who are responsible for designing and implementing patient education programs both in hospital and in outpatient areas.

Written materials and audiovisual aids designed for patient use are commonplace in most institutions today. Even so, patient education programs frequently have not been scientifically evaluated for their effectiveness. Innovative ideas for providing patient education need to be developed and explored for effectiveness, both in cost, and in increasing patient knowledge. Much more can be done by nurses to provide quality nursing care in the form of improved patient education. It is the investigator's hope that nurses will continue to scientifically explore this aspect of nursing care and utilize the results of studies to make changes in patient education programs that will ultimately bring about the greatest number of benefits both to the patient and to the caregivers.

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APPENDIX A

TIME:

Interviewer _____

Start _____

Date _____

Finish _____

Patient _____

KNOWLEDGE OF HEALTH DEVIATION;
ITS EFFECTS AND RELATED SELF-CARE MEASURES

Purpose of Component

1. To determine patient's ability to describe accurately his or her own health problems, relating symptoms, anatomy, and physiology in technical or non-technical terms.
2. To determine patient's ability to identify appropriate measures to control and/or decrease health problems after discharge.
3. To determine patient's ability to identify appropriate modifications in post-discharge daily routine necessitated by health problem.
4. To determine patient's ability to identify correctly situations related to particular health problems in which professional health care assistance would be needed.

Observer judgement:

1. Correct
2. Mixed - correct and incorrect
3. Don't know or irrelevant
4. Incorrect

HEALTH DEVIATION KNOWLEDGE (M.I.)

INTRODUCTION

"ONE ASPECT OF PATIENT CARE IS TO PREPARE PEOPLE TO CARE FOR THEMSELVES ONCE THEY GO HOME. TO HELP THEM ANTICIPATE AND HANDLE PROBLEMS WHICH MIGHT OCCUR THESE NEXT QUESTIONS ARE TO HELP US FIND OUT ABOUT PEOPLE'S PREPARATION FOR DISCHARGE."

"First I would like to ask you about your health problems."

What health problem brought you to the hospital

Correct responses () Don't know ()

If patient does not know what brought him/her to hospital, pose the question "Have you been told that you have any problems with your heart?"

Follow-up Questions for Diagnosis

1. Now I would like to ask you about your heart attack.
 - 1.a What part(s) of your body was affected by the heart attack?
 - b How does a heart attack affect the way your heart works?
 - c What symptoms might indicate to you that another heart attack was occurring?
(Must give 3 of possible 10 symptoms to be considered correct.)

Observer judgement:	1	a	1	2	3	4
	1	b	1	2	3	4
	1	c	1	2	3	4

Follow-up Questions for Symptoms

2. Now I'd like to ask you about chest pain.
 - 2.a Can you tell me how a heart attack produces chest pain?

Observer judgement:	1	2	3	4
---------------------	---	---	---	---

Follow-up Questions for Casual Factors

3. Now I'd like to ask you about coronary arter disease.
- 3.a What parts of your body are affected by coronary artery disease?
- b How does coronary artery disease cause a heart attack?

Observer judgement: 3 a 1 2 3 4
 3 b 1 2 3 4

Questions about Self-Care After Discharge

4. How can/should you have modified your daily routine because of the heart attack?

Observer judgement: 1 2 3 4

5. What situations related to your heart attack would prompt you to consult your physician, nurse or other health care professionals?

Observer judgement: 1 2 3 4

6. What, if anything, could you do to prevent angina?

Observer judgement: 1 2 3 4

7. If angina occurs, what might you do to decrease or control it?

Observer judgement: 1 2 3 4

APPENDIX B

THERAPEUTIC DIET

Purpose of Component

1. To determine patient's knowledge of therapeutic diet.
2. To ascertain patient's knowledge of relationship between the therapeutic diet and health.
3. To determine patient's knowledge of meal preparations and/or daily routine adjustments needed to maintain the therapeutic diet.

Pre-Discharge Interview

Interviewer _____

Follow Up Interview

Date _____

Patient _____

1. Have/were changes (been) recommended in your usual eating habits while you have been/were in hospital?

Yes _____ No _____ Don't know _____ N.A. _____

If yes, proceed to #2. If no or don't know, probe to find out if this is because the recommended changes are the same as they had previously been doing in their usual eating patterns. If this is the case note this on the sheet and mark N.A. - go to next section of interview.

2. How do these nutritional changes affect your health or relate to your disease/condition?

If the answer is "Feel better" ask "How"?

Observer Judgement: 1 2 3 4

3. Will/were there be foods which you should limit or not eat?

Yes _____ No _____ Don't know _____
(go to #4) (go to #5)

4. What kinds of foods should you limit or not eat?

Observer Judgement: 1 2 3 4

5. Will/did following these recommended nutritional changes make any difference in the way you, or the person who does the shopping, shop for groceries?

Fat and Na restriction: Probe for type of foods to buy.

Yes _____ No _____ Don't know _____
(go to #6) If no, ask "Why not?" Try to determine if the reason for this is because they have always shopped wisely. If so, this would constitute a correct answer. If they don't know, go to #7.

6. What will/do they or you have to do differently?

Observer Judgement: 1 2 3 4

7. Are there special things that have/had to be done when cooking in order to follow this nutritional change?

Na restrictions: Probe for use of salt

Fat restrictions: Probe for cooking methods

Yes _____ No _____ Don't know _____
(go to #8) If no, as "Why not?" Try to determine if the family's cooking methods are already sound for Na and Fat restrictions. If so, this would constitute a correct answer. If they don't know, go to #9.

8. What do/did you or the person doing the cooking have to do?

Observer Judgement: 1 2 3 4

9. How will/did you manage to follow these recommended nutritional changes at work?

If retired or unemployed - Mark N.A.

Observer Judgement: 1 2 3 4

10. How will/did you handle following these recommended nutritional changes on social occasions?

Observer Judgement: 1 2 3 4

11. Do you know if there are any printed materials about the recommended nutritional changes?

Yes _____ No _____ Don't know _____

12. Do you know where to get written information about the recommended nutritional changes?

Yes _____ Where? _____ No _____

_____ Knows of at least one place

13. Do you know if there are classes you can go to to learn more about these nutritional eating habits?

Yes _____ No _____ Don't know _____

14. If you were to need help planning or following your diet after you went home, to what group, agency or professional would you go for help in your community?

_____ Doesn't know _____ Knows of at least one place/person

APPENDIX C

Interviewer _____

Date _____

Patient _____

MEDICATION KNOWLEDGE

Purpose of the Component

To ascertain patient's knowledge of medications including name, reasons for, dose, action, side effects, treatment of side effects, and independent actions in preparing and managing taking of medications.

Observer judgement:

1. Correct
2. Mixed - correct and incorrect
3. Don't know or irrelevant
4. Incorrect

1. What are the names of the medicines you will be taking/took after discharge?

The patient should either be able to state the names of all the medications or provide the observer with the names in writing. If using the telephone, he must indicate he has them written down and be able to read them off. Either the generic or trade name may be given. If the patient responds with a description of what the drug does, e.g. "blood thinner", "heart pills", the observer should pursue and ask, "Can you tell me the name of your 'heart pill'?"

Observer judgement 1 2 3 4

Able to state names - circle 1

Has them written down and accessible - circle 2

Knows 1 or 2 but not all the names - circle 2

2. I'm now going to ask you questions about _____
(Name of Medication)

Use both trade and generic name.

3. How long have you been on this medication?

4. What is this medicine supposed to do for you? or What are the expected effects of this medicine? How does this medicine relate to your disease/condition?

A very general answer is not acceptable, e.g. "feel better" or "help my heart". The patient should know the expected effects of the medication, e.g. strengthen heart, relieve inflammation, or improve circulation.

Observer judgement: 1 2 3 4

5. How much of this medicine are you supposed to take?

This should be in specific amounts, e.g. 0.1 mgm. If the patient responds "one pill a day", this is not acceptable. Attempt to find out the specific dose. Dosages are on the data sheet.

Observer judgement: 1 2 3 4

6. At what time(s) will you take it?

The answer should include specific times and frequency, e.g. once a day in the early morning. "With meals" is not specific enough; find out the times of the meals. "Four times a day" is not specific enough, find out times.

Observer judgement: 1 2 3 4

7. Are there any situations when you should not take this medicine?

Yes _____ No _____ Don't know _____
(go to #8) (go to #9)

8. Tell me about them.

These questions are to establish if the patient knows for which medications he/she should modify the dose and/or time taken. E.g. "I take 1/2 a Diuril unless I notice my legs swelling, then I take 1 whole one for two days." "If my blood pressure is _____, I take one of my _____." "If I notice bleeding, I will not take my Coumadin until I call my doctor."

Observer judgement: 1 2 3 4

9. Are there special instructions about food or fluids because you are taking this medicine?

Yes _____ No _____ Don't know _____
(go to #10) (go to #11)

10. What are they?

Observer judgement: 1 2 3 4

11. Are there activities you should avoid while taking this medicine?

Yes _____ No _____ Don't know _____
(go to #12) (go to #13)

12. What are they?

Observer judgement: 1 2 3 4

13. Are there other medicines you should avoid while taking this medicine?

Yes _____ No _____ Don't know _____
(go to #14) (go to #15)

14. What are they?

Observer judgement: 1 2 3 4

15. Are there any side-effects this medicine might have?

Yes _____ No _____ Don't know _____
(go to #16) (go to #17)

16. What are they?

Observer judgement: 1 2 3 4

17. Before you take this medicine are there things you are supposed to do first?

Yes _____ No _____ Don't know _____
(go to #18) (go to #19)

18. Tell me what you need to do.

Observer judgement: 1 2 3 4

19. How will you fit taking this medicine into your daily routine?

Observer judgement: 1 2 3 4

APPENDIX C

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20. Are there things that would make you not take or not want to take this medication?

Yes _____ No _____ Don't know _____
(go to #21)

21. What ways have you thought of to take care of (cope with) that?

Observer judgement: 1 2 3 4

KNOWLEDGE OF PHYSICAL ACTIVITY RESTRICTIONS

Purpose of Component

To determine the patient's knowledge of recommended physical activity restrictions.

Interviewer _____

Date _____

Patient _____

1. Were restrictions in any of the following physical activities recommended for you after you left the hospital?

Check the Activities for which the Patient gives a "yes" response:

- | | |
|---|-------------------------------------|
| ☐ operating a motor vehicle | ☐ don't know |
| ☐ lifting heavy objects | ☐ none |
| ☐ climbing stairs | |
| ☐ crossing your legs | |
| ☐ returning to work (or housework) | |
| ☐ running | |
| ☐ other (describe) | |

Observer judgement: 1 2 3 4

2. What will these activity restrictions do for your heart?

Observer judgement: 1 2 3 4

3. How do these activity restrictions accomplish that? (How do they help your heart?)

Observer judgement: 1 2 3 4

4. What things might happen to your heart if you don't restrict these activities?

Observer judgement: 1 2 3 4

5. How long a time will you need to follow these restrictions on your activities?

Observer judgement: 1 2 3 4

6. Were there times or circumstances when it was inconvenient for you to restrict these activities as recommended?

Yes _____ No _____ Don't know _____
(go to #7) (go to #8) (Mark #7 N.A.)

7. How did you plan to handle these circumstances and still be able to restrict your activities?

Record Each Situation and the Patient's Solution

Observer judgement: _____ NA
 _____ Has plan for each situation.
 _____ Has no plan or only partial one.

8. Do you know if there are any printed materials about your activity restrictions?

Yes _____ No _____ Don't know _____

Interviewer _____

Date _____

Patient _____

RECOMMENDED EXERCISES

Purpose of Component

To determine the patient's knowledge of recommended exercises.

Observer judgement:

1. Correct
2. Mixed - correct and incorrect
3. Don't know or irrelevant
4. Incorrect

1. What exercises have been recommended for you after you leave the hospital?

Observer judgement: 1 2 3 4

2. What will these exercises do for your body?

Observer judgement: 1 2 3 4

3. How often were/are you supposed to do these exercises?

Observer judgement: 1 2 3 4

4. At what times of the day were/are you supposed to do these exercises?

Observer judgement: 1 2 3 4

- Yes _____ No _____ Don't know . _____

Interviewer _____

Date _____

Patient _____

KNOWLEDGE OF RECOMMENDED REST

Purpose of Content

To determine the patient's knowledge of recommended rest activities.

Observer judgement:

1. Correct
2. Mixed - correct and incorrect
3. Don't know or irrelevant
4. Incorrect

1. Were rest activities recommended for you after you leave/left the hospital?

Observer judgement: 1 2 3 4

2. What type of rest activities were/are you supposed to do?

Observer judgement: 1 2 3 4

3. What will/did these restful activities do for your heart?

Observer judgement: 1 2 3 4

4. How does the recommended rest accomplish that? (How does it help your heart?)

Observer judgement: 1 2 3 4

5. What things might happen to your heart if you don't/didn't do these restful activities as recommended?

Observer judgement: 1 2 3 4

6. Are/were there times or circumstances when it would be/was difficult or inconvenient for you to do these restful activities as recommended?

Yes _____ No _____ Don't know _____
(go to #7) (Mark #7 as N.A.)

7. How did/do you plan to handle these circumstances and still be able to get your rest?

Record Each Situation and the Patient's Solution.

Observer judgement:

_____ NA

_____ Has plan for each situation.

_____ Has no plan or only partial one.

HEALTH DEVIATIONCorrect Responses

1 a Part of body affected
by M.I.

heart muscle

1 b Effect of M.I.

"The pumping action is impaired
because of muscle damage".

1 c M.I. Symptoms

3 symptoms must be given: pain
(chest, arms, neck, jaw, shoulder,
throat or "indigestion" symptoms),
- sweating or perspiration
- moist clammy skin
- dizziness
- shortness of breath
- weakness
- fatigue
- nausea or vomiting
- irregular heart beat
- pale or grey skin color

2 a Cause of chest pain

"Pain is felt because a blockage in
the vessels prevents the heart
muscle from getting enough oxygen."

3 a Parts of body affected
by CAD

the vessels or arteries to the heart

3 b Cause of M.I.

"When a coronary artery or vessel is
blocked the part of the heart muscle
deprived of blood is damaged."

4 Modification of routine

The intent is to determine the
patient's ability to identify appro-
priate modifications in post-
discharge daily routine necessitated
by health problem. Examples: not
go to work, take an afternoon nap,
be less active, etc.

*Three answers are required for a correct response.

- alternate easy and hard tasks. Allow time to rest. Stop when tired. Take a rest period after meals. Get lots of sleep. Avoid lifting, pushing and pulling heavy objects, avoid crowds of people or people who upset you. Won't be able to go to work. Take medications. Follow diet.

- 5 Situations in which to call physician and other health care professionals.

The intent is to determine patient's ability to identify correctly situations in which he should obtain professional help after discharge. Symptoms of complications, questions or problems with therapy at home, follow-up and advice regarding a chronic illness are all appropriate responses. Examples: pain, dyspnea, no relief with therapy or medication, advice on travel, regular check-ups.

*One answer is required for a correct response.

- Heavy pressure or squeezing pain in chest. Pain in shoulder, arm, neck, jaw which is not relieved by nitroglycerine, increased S.O.B., fainting, very slow or rapid heart rate.

- Questions on problems with medications.

- Questions on problems regarding activity or diet.

6. Prevention of Angina

The intent is to determine patient's ability to identify appropriate preventive self-care measures related to a potential health problem after discharge. Examples: get adequate rest, avoid stress and over-excitement, stop smoking.

*Three answers are required for a correct response.

- stop cigarette smoking
- follow exercise schedule as recommended
- take medications
- get extra rest and sleep
- take a nitro tab prior to vigorous exercise
- slow down activities
- avoid activities causing chest pain

7. Control of Angina

The intent is to determine patient's ability to identify appropriate self-care measures for controlling or reducing a potential health problem which may occur after discharge. Sit down, rest and take nitro.

*One answer is required for a correct response.

Take nitro tablets, take medications, slow down activities, avoid activities which cause chest pain.

THERAPEUTIC DIET

- 2 Affect on health or
related to disease/
condition

Diet

Sodium restricted

Fat restricted

If overweight

- 3 Should foods be limited
or restricted.

- 4 Type of foods to limit
or restrict.

Sodium restricted

Fat restricted

Calories restricted

Correct Responses

The intent is to determine the patient's ability to state the health benefits to be gained from his/her diet. The example given should be specific. If the response is vague or non-specific, probe for further information. Examples of correct responses follow.

Expected Effect

The salt is restricted so I don't retain fluid and my heart doesn't have to work too hard.

To decrease the cholesterol or fats in blood so hopefully plaques do not develop and obstruct my blood vessels. Help prevent a heart attack.

To lose weight so my heart does not have to work as hard.

The correct answer is "yes".

*Must give at least three examples to be considered correct.

Pretzels, potatoe chips, salted popcorn, packaged luncheon meats, sauerkraut, salt, soy sauce, boullion cubes, canned, salted or smoked meats, bacon, bologna, frankfurters, ham, sausage, canned vegetables.

Fried foods, fatty meats

Simple sugars - cakes, cookies, soda pop, candy, pies, etc.

5-6 Differences in shopping

The intent of the questions to determine the patient's knowledge about the label-reading, buying special products, eliminating other usually bought products. Examples of correct responses follow.

Sodium restriction

Read labels on canned foods and prepared meats. *Serve Na restriction (200 mgm or less) would entail buying low salt bread, unsalted butter.

Fat restriction

Purchase low saturated fat foods like corn and safflower oils, corn oil margarine, low-fat milk. Buy only lean meat.

Sugar restriction

Read labels for added sugars.

7-8 Differences in cooking:

This is to determine whether the patient has a plan of action when altered cooking techniques are required. Response should be specific plans, e.g., "I will broil more foods"; "I will use all egg whites and no egg yolks in baking"; "I will let people add salt at the table rather than add it while cooking." Examples of correct responses follow.

Sodium restriction

Don't use salt in cooking.
Don't add salt at table.
Don't fry foods.
Use less sugar including honey.
Bake less "sweets".

9 Manage nutritional changes at work

This and the next question are to determine if potential problem times for following the diet have been thought through. Examples are: "I will bring my lunch"; "I will carry a list of foods allowed." Unacceptable answers would be: "I won't eat lunch", "I won't follow the diet."

- 10 Manage nutritional changes on social occasions

Acceptable responses are: "I'll tell the hostess ahead of time about my diet"; "I'll ask how the foods were prepared"; "I'll ask what is in combination dishes"; "I'll eat only those things I know are allowed". "I'll go off the diet for one meal" is an unacceptable response unless the patient indicates he will eat only moderate amounts of the restricted foods.

11-12 Written information

All diets have some printed/written materials relating to them. The question is to determine if the patient knows at least one source to obtain material. If the patient has a diet booklet with him. Mark Yes; Booklets supplied by dietician are: "Nutritional Guidelines For A Healthy Heart" "Canada Food Guides" "3 - 5 Gm. Sodium Booklet" Patient does not have to name the booklets but must indicate he can get them from the hospital or the dietician.

- 13 Diet classes

The correct response is yes. Diet classes are held every Tuesday and Wednesday, Station 66 UAH at 1:30 p.m.

- 14 Informational sources available

The acceptable response is yes. Examples of correct responses are MD, dietician, nutritionist, local hospital, Heart Foundation.

MedicationsCOUMADINCorrect Response

- | | | |
|-------|------------------------------------|--|
| 4 | Why necessary? | To prevent blood clots or another heart attach "blood is too thick" or "to thin the blood". |
| 5 | Dosage | - must check with doctor weekly or twice weekly, whichever plan has been given. |
| 6 | Time taken | - should reflect times that will maintain constant blood levels. |
| 7-8 | When not to take | - if I was bleeding or getting a lot of bruises I would not take it and call the doctor. |
| 9-10 | Special food or fluid instructions | - must limit quantity of alcoholic beverages.
- must not eat very large quantities of green leafy vegetables. |
| 11-12 | Restricted activities | - should not play violent contact sports.
- should be careful about using sharp objects. |
| 13-14 | Restricted medicines | - *should not take any medications without checking first with M.D.
One example: ASA, sleeping pills, cold medicines would be considered correct. |
| 15-16 | Side effects | Bleeding, brushing, bloody or tarry stools, excessive bleeding from cut, gums, or nose. |
| 17-18 | Pre-taking activities | No |
| 19 | Daily routine adjustment | - Plan should be practical and specific "I'll put them in a special container each day" "I'll carry them wit me when I go out for the day". |
| 20-21 | Not wanting to take medications | Taste, texture or not wanting to take medications are factors that may influence taking the medication. Plan should be practical and specific. |

DIGOXIN, LANOXIN, DIGITALISCorrect Response

- | | | |
|-------|------------------------------------|---|
| 4 | Why necessary? | Weak heart - CHF (fluid in lungs, legs) slows heart so it does not beat too fast. |
| 5 | Dosage | Check data sheet |
| 6 | Time taken | Any time of day acceptable - multiple doses equally spaced. |
| 7-8 | When not to take | Yes - if pulse is below 60. |
| 9-10 | Special food or fluid instructions | Eat foods high K ⁺ ; bananas, orange juice. |
| 11-12 | Restricted activities | No |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | *G.I. (at least one) - anorexia, nausea, vomiting, diarrhea, cardiac-decrease pulse, palpitations.
Eye - disturbed vision, photophobia. |
| 17-18 | Pre-taking activities | Take pulse |
| 19 | Daily routine adjustment | Plan should be practical and specific.
"I'll put them in a special container each day." "I'll carry them with me when I go out." |
| 20-21 | Not wanting to take medications | Tast, texture or not wanting to take medications are factors that may influence taking the medication.
- plan coping should be practical and specific. |

INDERAL - PROPRANOLOLCorrect Response

- | | | |
|-------|------------------------------------|---|
| 4 | Why necessary? | - to stop irregular, fluttering heart.
- to help or prevent chest pain.
- for my blood pressure. |
| 5 | Dosage | Check data sheet |
| 6 | Time taken | Times should be equally spaced. |
| 7-8 | When not to take | No - medication should be gradually withdrawn. |
| 9-10 | Special food or fluid restrictions | No |
| 11-12 | Restricted activities | No |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | Yes - at least one of the following:
severe weakness, lightheadedness, insomnia, depression, visual disturbances, nausea - vomiting, constipation/diarrhea, rash, reversible alopecia. |
| 17-18 | Pre-taking activities | No |
| 19 | Daily routine adjustment | Plan should be practical and specific.
"I'll put them in a special container each day."
"I'll carry them with me when I go out." |
| 20 | Not wanting to take | Taste, texture or not wanting to take medications are factors that may influence taking the medications.
- plan for coping should be practical and specific. |

ADALAT - NIFEDIPINECorrect Responses

- | | | |
|-------|------------------------------------|--|
| 4 | Why necessary? | - to prevent chest pain
- to prevent another heart attack |
| 5 | Dosage | Check data sheet - usually 10-20 mg |
| 6 | Time taken | Times should be equally spaced. |
| 7-8 | When not to take | No |
| 9-10 | Special food or fluid instructions | No |
| 11-12 | Restricted activities | No |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | Eyes - at least one of the following: dizziness, lightheadedness, headache, general weakness, shakiness, sleep disturbances, blurred vision, depression, nausea and vomiting, G.I. distress, heartburn, diarrhea/constipation, muscle cramps, S.O.B., body rash, sweating, chills. |
| 17-18 | Pre-taking activities | No |
| 19 | Daily routine adjustment | - plan should be practical and specific.
"I'll put them in a special container each day."
"I'll carry them with me when I go out." |
| 20 | Not wanting to take medications | Taste, texture or not wanting to take medications are factors that may influence taking the medications.
- plan for coping should be practical and specific. |

NITROGLYCERINCorrect Response

- | | | |
|-------|------------------------------------|--|
| 4 | Why necessary? | - chest pain, angina |
| 5 | Dosage | * - 1-3 tablets as necessary is considered a correct response.
Dosage in mgm not necessary. |
| 6 | Time taken | Whenever having chest pain or before activities that may or do produce chest pain, i.e., sexual intercourse, walking. |
| 7-8 | When not to take | - if blood pressure is too low, i.e., feeling faint or dizzy.
- if more than 3 tabs have already been taken within the last 5-6 min. |
| 9-10 | Special food or fluid instructions | No |
| 11-12 | Restricted activities | Avoid activities of all types until pain has gone away. |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | Yes, at least one of the following: headache, dizziness, flushing, blackouts or fainting, fast heart rate. |
| 17-18 | Pre-taking activities | Stop and rest or set down before taking tablet if having chest pain. |
| 19 | Daily routine adjustments | Carry tablets at all times. Keep covered in dark bottle. Check for expiry dates on bottle. |
| 20 | Not wanting to take medication | May give headaches or make dizzy.
- plan for coping should be practical and specific, i.e., take ASA with tablets, sit or lie down prior to taking medication or "Will continue to take them and hope that the symptoms will eventually go away." |

LOPRESSOR-METOPRALOLCorrect Response

- | | | |
|-------|------------------------------------|--|
| 4 | Why necessary? | - because of high blood pressure
- to help my chest pain or to prevent chest pain. |
| 5 | Dosage | Check data sheet.
50 mg to 100 mgm tabs. |
| 6 | Time taken | Should reflect times that will maintain constant blood levels - equally spaced. |
| 7-8 | When not to take | No - medication should be gradually withdrawn. |
| 9-10 | Special food or fluid instructions | No |
| 11-12 | Restricted activities | No |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | Yes - at least one of the following:
headache, dizziness, insomnia, mental depression, lightheadedness, anxiety, weakness, vivid dreams, diarrhea, constipation, heartburn, nausea, vomiting, dry mouth, S.O.B., sweating, skin rashes, non-specific visual disturbances, itching eyes, blurred vision, tiredness, and weight gain. |
| 17-18 | Pre-taking activities | No |
| 19 | Daily routine adjustment | Plan should be practical and specific.
"I'll put them in a special container or place each day."
"I'll carry them with me when I go out." |
| 20 | Not wanting to take medications | Taste, texture or not wanting to take medications are factors that may influence taking the medications.
- plan for coping should be practical and specific. |

ISORDILCorrect Response

- | | | |
|-------|---------------------------------------|--|
| 4 | Why necessary? | Chest pain, angina |
| 5 | Dosage | Check data sheet.
Usually 5-10 mgm q 2-4 hours. |
| 6 | Time taken | Equally spaced - should reflect
times that will maintain blood
levels. |
| 7-8 | When not to take | No |
| 9-10 | Special food or fluid
restrictions | No |
| 11-12 | Restricted activities | No |
| 13-14 | Restricted medicines | No |
| 15-16 | Side effects | Yes, at least one of the following:
headache, dizziness, weakness,
fainting, dermititis, nausea and
vomiting. |
| 17-18 | Pre-taking activities | No |
| 19 | Daily routine adjustments | Plan should be practical and
specific.
"I'll put them in a special
container or place each day."
"I'll carry them with me when I go
out." |
| 20 | Not wanting to take
medication | - may give headaches or make dizzy
- plan for coping should be
practical and specific. i.e., take
ASA with tablets, "Sit or lie down
if I feel dizzy". or "Will continue
to take them and hope that the
symptoms will eventually go away." |

PHYSICAL ACTIVITY RESTRICTIONSCorrect Responses

- | | | |
|-----|---|---|
| 1 | Activity restrictions | Yes - restrictions have been recommended in all of the following activities. |
| 2 | Effect on heart | All items listed cause the heart to increase its work. By eliminating or gradually returning to these activities the heart can build up its vessels and muscle. |
| 3 | How do they help the heart? | <p>The intent of the question is to determine the patient's knowledge of the desired effects of the activity restrictions. The response should be specific rather than "make me feel better". Probe when necessary.</p> <p>- The harder the heart works, the more oxygen it needs. Decreasing the work of the heart keeps the need for oxygen within the limits of what can be supplied by the partially blocked blood vessels.</p> <p>- Decreasing the work of the heart give the injured heart muscle time to heal.</p> |
| 4 | Things that might happen if activities not restricted | <p>May prolong healing or could cause further damage to the heart wall.</p> <p>May experience pain or reinfarction.</p> |
| 5 | Time of restrictions | 6-8 weeks for most of them. Some such as heavy lifting may be restricted indefinitely. |
| 6-7 | Problems carrying out recommended restrictions | <p>The intent is to determine circumstances which may make it difficult to carry out activity restrictions. Examples: must go back to work, must drive a car, has small children to carry, must do own housework.</p> <p>- plan for coping should be specific and practical.</p> |
| 8 | Printed materials | Yes - Heart Attack - What's Ahead Booklet. |

RECOMMENDED EXERCISESCorrect Response

- | | | |
|-----|----------------------------|---|
| 1 | Recommended exercises | Walking exercises / whole body exercises |
| 2 | Effect of exercise on body | The intent of the question is to determine the patient's knowledge of the desired effects of the exercises. The response should be specific effect rather than "help my back" or "make me feel better". Probe when necessary. |
| 3 | Frequency of exercises | Once/day for 1-2 weeks, then twice/day. |
| 4 | Times to do exercises | Walking - prior to meals and not during extreme times of the day for heat or cold.
- Usually prior to lunch and mid afternoon in winter or late afternoon or evening in summer. |
| 5-6 | Avoiding exercises | Yes - "If I am having chest pain or shortness of breath." "If I have a temperature or any type of infection." "If I do not feel well." "If it is too hot or too cold outside I may have to either wait for it to cool off if it is too hot or go walk inside if it is too cold outside. |
| 7-8 | Problems doing exercises | Try to determine potential problems in carrying out exercises - observer judgement will be required to determine if answers are reasonable for that person. |
| 9 | Printed material | Yes - Heart Attack - What's Ahead Booklet |

RECOMMENDED RESTCorrect Response

1-2 Recommend rest activities

Yes - naps, rest

Responses can be general - "just rest a lot sitting" to specific "I must lie down for 30 minutes after each meal" or "After I do any walking or climbing stairs I must sit and rest a few minutes".

3. Effect on heart

Allows heart to heal.

4. How does it help heart?

Heart does not have to work so hard when resting. Resting after meals may reduce angina by reducing the amount of oxygen needed in the leg muscles and allowing it to go to the stomach to help digest food.

5. What might happen if restful activities are not followed?

Heart would not heal, may have angina or a reinfarction.

6-7 Circumstances making it difficult to do recommended rest activities

The intent is to determine circumstances which may make it difficult to carry out activity restrictions. Examples: must go back to work, house very noisy, does not like to sit still or lie down. Observer judgement will be required to indicate whether or not the patient has a plan to handle difficulties with following the recommended rest activity.

APPENDIX M

GUIDELINES FOR USE OF KNOWLEDGE SCALES

(4 item scale)

OBSERVER JUDGMENT:

1. Correct
2. Mixed (both correct and incorrect)
3. Don't know or irrelevant
4. Incorrect

The scales are arranged in order to evaluate the presence of knowledge that would be helpful for successfully managing at home, or of knowledge that would be harmful. Knowledge about health problems that is correct and complete is most helpful. A mixture of correct and incorrect knowledge, lack of knowledge, or irrelevant knowledge is placed midway between as to being helpful or harmful to successful management of health problems after discharge. Incorrect knowledge is judged to be most harmful.

In using the questionnaire where these scales appear, the observer/interviewer should record the patient's response as given for each question of the appropriate series. After the interview, the interviewer should then review the responses and circle the scale number below the response that best describes the response. This judgment should be guided by the examples of correct responses in the manual and by face-sheet information. When several responses are being scored on one scale, the group of responses should be evaluated as a whole.

DEFINITIONS

Correct -- The patient's responses are on the list of correct responses in the observer manual or the observer judges that the patient's statements are accurate and show knowledge that will be helpful in managing the problem at home. The patient's responses are still considered correct if irrelevant statements are made in addition to correct responses. To be correct, the patient's response must include all the responses on the correct response lists for that question. The patient's response is considered correct if it is accurate and helpful in managing self-care.

Mixed -- The patient gives both correct and incorrect information in his response to the question.

Doesn't know -- The patient makes a statement such as "I don't know", "The nurse told me but I can't remember", or "I can't think of anything".

Irrelevant -- The response does not address the question or the response describes an action that differs from recommended therapy and may be ineffective, but is harmless and does not interfere with therapy, e.g., "Just hope for the best". (When irrelevant statements are made, the observer should probe to obtain a relevant response if the patient can give one.)

Incorrect -- The patient's responses are not on the list of correct responses and the observer judges them to be incorrect i.e., to show misinformation that would either harm the patient or interfere with therapy. The patient's responses are still considered incorrect if irrelevant statements are made in addition to the incorrect responses.

Evaluating Patient Responses

The chart below summarizes the guidelines for evaluating the patient's responses on the 4 item knowledge scales.

Point on Scale	Defining Characteristics	May Also Include	Must Not Include
Correct	1) At least one correct statement is made. 2) All items from correct response list are included.	Irrelevant statements	Incorrect statements
Mixed	1) At least one correct statement is made and one or more items from correct response list are omitted. 2) At least one correct and incorrect statement is made	Irrelevant statements	

(continued)

Point on Scale	Defining Characteristics	May Also Include	Must Not Include
Irrelevant or Don't know	1) The patient makes a statement such as "I don't know" 2) No relevant response (correct or incorrect) can be obtained by probing.		Correct statements. Incorrect statements. (If correct or incorrect statements are made, they are used to evaluate the response instead of the irrelevant or "don't know" statements.)
Incorrect	At least one incorrect statement is made.	Irrelevant statements	Correct statements

APPENDIX N

INFORMED CONSENT FORM

PROJECT TITLE: The Effectiveness of Patient Education Follow-Up By Telephone on Knowledge of Post-Myocardial Infarction Patients As A Basis For Long-Term Lifestyle Readjustment.

INVESTIGATOR: Barbara E. Stevens, R.N., B.Sc.N., MN Candidate

PROJECT ADVISOR: Dr. Janet Kerr

The purpose of the research project is to investigate the use of the telephone follow-up calls as a method for increasing knowledge about care of post myocardial infarction patients during the first six to eight week post discharge from hospital.

Participation in this study is voluntary and participants will be randomly assigned to test or control group. All participants are requested to complete an interview related to their cardiac condition prior to discharge from hospital upon return to the outpatient clinic approximately 6-8 weeks after hospital discharge. The test group will be required to be available for four weekly telephone calls from the nurse researcher during this time period. The interviews and telephone calls will be taped in order to ensure accuracy of information collected. All tapes will be erased at the end of the study.

I UNDERSTAND that all information will be kept confidential and anonymity will be ensured. Participants names will not appear on any documents or reports.

I UNDERSTAND that I will not incur any costs related to this study and that all costs of telephone calls will be the responsibility of the researcher. Interviews and telephone calls will occur during a time and date that is mutually agreed upon by myself and the researcher.

I UNDERSTAND that I am free to withdraw my consent and terminate my participation at any time without penalty.

I HAVE BEEN GIVEN THE OPPORTUNITY TO ASK WHATEVER QUESTIONS I DESIRE ABOUT THIS STUDY AND ALL SUCH QUESTIONS HAVE BEEN ANSWERED TO MY SATISFACTION.

(signature)

(date)

(witness)

DATA SHEET

Name _____ Age (D.O.B.) _____
Address _____ Sex _____
Telephone _____ Physician _____
Marital Status _____ Next of Kin _____
Date of M.I. _____ Discharge Date _____
Severity and Type of M.I. _____
Occupation _____
Classification _____
GED Level (see code) _____

Discharge Information

Drugs _____

Diet _____

Other Pertinent Discharge Information _____

GED Levels6
5
4
3
2
1Approximate Duration of Schooling17 years plus
13 to 16 years
11 to 12 years
9 to 10 years
6 to 8 years
less than 6 years

Follow Up Information

1. Main source of info. re: M.I. after discharge _____

2. Drug changes _____

3. Number and types of visits (other than routinely scheduled) to:

G.P. _____

Cardiac Specialist _____

Emerg. Dept. _____

Hospitals _____

Other Health Personnel _____

4. Other pertinent follow up information _____

APPENDIX Q

M.I. Telephone Follow-Up Study

Patient's Name _____ Call From _____

Date _____ Approx. Length of Call _____

Problem or Concern

Nursing Action
